

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 H
Edition : 28.05.90
Replaces : 10.11.89
Test oil : ISO-4113
Combination no. : 0 400 074 899
Injection pump
Pump designation : PES4M55C32ORS167
EP type number : 0 410 054 960
Governor
Governor design. : RSF375/1700M69-4
Governor no. : 0 420 021 139

Customer-spec. information
Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 49.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270
Tolerance + - ° : 0.00 (1.00)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000
Rack travel in mm : 12.30...12.40
Del.quantity cm3/ : 3.6...3.7
100 s: (3.5...3.8)
Spread cm3 : 0.2
100 s: (0.3)

2nd speed rpm : 375.0
Rack travel in mm : 5.5...5.7
Del.quantity cm3/ : 0.5...0.6
100 s: (0.4...0.9)
Spread cm3 : 0.1
100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1000
Aneroid pressure h: 1100
Del.quantity : 36.0...37.0
1000 : (35.0...38.0)
Spread cm3 : 2.50
1000 : (3.00)

RATED SPEED

1st version
Control lever
position degrees: 50...0
3rd rack travel in: 9,0...9,5
Speed rpm : 1800
4th rack travel in: 2300
Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER POSITION

Speed rpm : 1000
Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever
position degrees: 12...16
Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 5.6

Testing:

Speed rpm : 250
Minimum rack travel: 10.20
Speed rpm : 375
Rack travel in mm : 5.50...5.70
Rack travel in mm : 3.00
Speed rpm : 580...680
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 420
Rack travel in mm : 4,4...4,6
: (4,3...4,7)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.30...12.40
2nd speed rpm : 1400
Rack travel in m: 11.70...12.00
3rd speed rpm : 1650
Rack travel in m: 11.40...11.70
4th speed rpm : 500 *
Rack travel in m: 11.60...11.90 *
5th speed rpm : 800**
Rack travel in m: 12.00...12.30**

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm³/ : 36.0...37.5
1000 s: (35.0...38.5)
Spread cm³ : 2.50
1000 s: (3.)
Aneroid pressure h: 1100

A02

Speed rpm : 1650
Del.quantity cm³/ : 36.5...38.5
1000 s: (35.5...39.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500
Del.quantity cm³/ : 31.5...33.0
1000 s: (30.5...34.0)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 800
Del.quantity cm³/ : 34.0...35.5
1000 s: (33.0...36.5)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Rack travel in mm : 9.00...9.50
Del.quantity cm³/ : 28.0...32.0
1000 s: (27.0...33.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.50...5.70
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE
(ELA)

Speed rpm : 425
Rack travel in mm : (7,0...8,6)
Del.quantity cm³/ : -
1000 s: (10,5...18,5)

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

- * Setting point for negative torque
control - negative retainer behind
- ** Reference measurement:
Control-rod travel and delivery too
large - position spiral spring
Control-rod travel and delivery too
small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 a
 Edition : 28.05.90
 Replaces : 10.11.89
 Test oil : ISO-4113

Combination no. : 0 400 074 900

Injection pump
 Pump designation : PES4M55C320RS167
 EP type number : 0 410 054 960
 Governor
 Governor design. : RSF360/1900M70-4
 Governor no. : 0 420 021 123

Customer-spec. information
 Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

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Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.1...5.3

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5

Speed rpm : 2100

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 335
Rack travel in mm : 5.2

Testing:

Speed rpm : 250
Minimum rack travel : 7.50
Speed rpm : 335
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.50
Speed rpm : 550...650
Speed rpm : 1000
Maximum rack travel : 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 3,9...4,1
: (3,8...4,2)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in mm : 12.80...12.90
2nd speed rpm : 1400
Rack travel in mm : 12.20...12.50
3rd speed rpm : 1900
Rack travel in mm : 11.40...11.70
4th speed rpm : 500
Rack travel in mm : 12.00...12.30 *
5th speed rpm : 800
Rack travel in mm : 12.40...12.70**

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000

1st pressure hPa : 900
Rack travel in mm : 0.50...0.70
2nd pressure hPa : 750
Rack travel in mm : 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm³/ : 39.5...41.0
1000 s: (38.5...42.0)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100

Speed rpm : 1900
Del.quantity cm³/ : 39.5...41.5
1000 s: (38.5...42.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500
Del.quantity cm³/ : 34.5...36.0 *
1000 s: (33.5...37.0) *
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 800
Del.quantity cm³/ : 37.5...39.0 **
1000 s: (36.5...40.0)**
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2100
Rack travel in mm : 7.00...7.50
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 335
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 360
Rack travel in mm : (12,3...13,7)
Del.quantity cm³/ : -
1000 s: (33,0...41,0)
Current A : 1,8
Control lever at full-load stop
Speed rpm : 2500
Rack travel in mm : 0,0...1,0

Current

short-duration A : 3,0

Starting test

Speed rpm : 100

Del. quantity cm³/ : -

min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar,

control rod must move quickly to

control-rod travel = 0 mm

Difference in start of delivery between

max. and min. value = max. 1° angular

displacement of cam

Start-of-delivery sensor system:

adjustment and blocking with device

KDEP 1077 = 15.3°...15.7°

(15.2...15.8°) angular displacement of

cam following start of delivery of

cylinder no. 1.

* Setting point for negative torque

control - negative retainer behind

** Reference measurement:

Control-rod travel and delivery too

large - position spiral spring

Control-rod travel and delivery too

small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,0 r5
 Edition : 28.05.90
 Replaces : 17.02.89
 Test oil : ISO-4113

 Combination no. : 0 400 074 904

 Injection pump
 Pump designation : PES4M55C320RS169
 EP type number : 0 410 054 959
 Governor
 Governor design. : RSF375/2300M56-6
 Governor no. : 0 420 021 110

Customer-spec. information
 Customer : MB-PKW

Engine : OM601-ECE

1st version kW : 53.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)
 Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 3.2...3.3

100 s: (3.1...3.4)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.9...7.1

Del.quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 32.0...33.0

1000 : (31.0...34.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 9,0...9,4

Speed rpm : 2500

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,7...1,8

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 7.0

Testing:

Speed rpm : 250
Minimum rack travel: 11.50
Speed rpm : 375
Rack travel in mm : 6.90...7.10
Rack travel in mm : 2.50
Speed rpm : 640...740
Speed rpm : 1000
Maximum rack travel: 1.80

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 5,8...6,0
: (5,7...6,1)

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1000
Rack travel in m: 12.80...12.90
2nd speed rpm : 1800
Rack travel in m: 12.20...12.40
3rd speed rpm : 2200
Rack travel in m: 11.90...12.10

Aneroid/Altitude
Compensator Test

1st version

Pressure hPa : 950
Rack travel mm : 0.00...0.20

1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1800
Del.quantity cm³/ : 34.0...35.5
1000 s: (33.0...36.5)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100
Speed rpm : 2200
Del.quantity cm³/ : 34.0...36.0
1000 s: (33.0...37.0)
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Aneroid pressure h: 1100
Speed rpm : 2500
Rack travel in mm : 9.00...9.40
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 6.90...7.10
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING PNEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (8,6...10,2)
Del.quantity cm³/ : -
1000 s: (12,0...20,0)
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 19.3°...19.7°
(19.2...19.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
0.2 mm control-rod travel deduction
allowable after switchover point (of
starting cam) up to 1000 1/min.
Control-lever position 46.5°,
control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 375$ 1/min. and $p_u = 450$ mbar, control rod must move quickly to control-rod travel = 0 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 B
Edition : 10.11.89
Replaces : 28.05.90
Test oil : ISO-4113

Combination no. : 0 400 074 905

Injection pump
Pump designation : PES4M55C32ORS167
EP type number : 0 410 054 960
Governor
Governor design. : RSF375/1900M69-1
Governor no. : 0 420 021 102

Customer-spec. information
Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00x2.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
: (1.95...2.15)
Rack travel in mm : 20.00...22.00
Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 4.0...4.1

100 s : (3.9...4.2)

Spread cm³ : 0.2

100 s : (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 0.5...0.6

100 s : (0.4...0.9)

Spread cm³ : 0.1

100 s : (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5

Speed rpm : 2100

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 375
Rack travel in mm : 5.1

Testing:

Speed rpm : 250
Minimum rack trave: 10.20
Speed rpm : 375
Rack travel in mm : 5.00...5.20
Rack travel in mm : 3.00
Speed rpm : 450...550
Speed rpm : 1000
Maximum rack trave: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 420
Rack travel in mm : 3,9...4,1
: (3,8...4,2)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.80...12.90
2nd speed rpm : 1400
Rack travel in m: 12.20...12.50
3rd speed rpm : 1900
Rack travel in m: 11.40...11.70
4th speed rpm : 500 *
Rack travel in m: 12.00...12.30 *
5th speed rpm : 800**
Rack travel in m: 12.40...12.70**

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000
1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm3/ : 39.5...41.0
1000 s: (38.5...42.0)
Spread cm3 : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100

Speed rpm : 1900
Del.quantity cm3/ : 39.5...41.5
1000 s: (38.5...42.5)
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500 *
Del.quantity cm3/ : 34.5...36.0 *
1000 s: (33.5...37.0) *
Spread cm3 : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 800**
Del.quantity cm3/ : 37.5...39.0 **
1000 s: (36.5...40.0)**
Spread cm3 : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1100
Speed rpm : 2100
Rack travel in mm : 7.00...7.50
Del.quantity cm3/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm3 : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 375
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm3 : 1.00
1000 s: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed rpm : 425
Rack travel in mm : (6,6...8,2)
Del.quantity cm3/ : -
1000 s: (11,5...19,5)
Vacuum hPa : 400

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With $n = 375$ 1/min. and $p_u = 450$ mbar,
control rod must move quickly to
control-rod travel = 0 mm

* Setting point for negative torque
control - negative retainer behind
** Reference measurement:
Control-rod travel and delivery too
large - position spiral spring
Control-rod travel and delivery too
small - position spiral spring upwards

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,3 C
 Edition : 28.05.90
 Replaces : 10.11.89
 Test oil : ISO-4113
 Combination no. : 0 400 074 907
 Injection pump
 Pump designation : PES4M55C32ORS167
 EP type number : 0 410 054 960
 Governor
 Governor design. : RSF360/2000M70
 Governor no. : 0 420 021 105

Customer-spec. information
 Customer : MB-NFZ

Engine : OM601-2.3L

1st version kW : 60.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 469 990 351

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10
 : (1.95...2.15)

Rack travel in mm : 20.00...22.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 4.0...4.1

100 s: (3.9...4.2)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 335.0

Rack travel in mm : 5.1...5.3

Del. quantity cm³/ : 0.5...0.6

100 s: (0.4...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 1100

Del. quantity : 40.0...41.0

1000 : (39.0...42.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 7,0...7,5

Speed rpm : 2200

4th rack travel in: 2500

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER
 POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 335
Rack travel in mm : 5.2

Testing:

Speed rpm : 250
Minimum rack travel: 7.50
Speed rpm : 335
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.50
Speed rpm : 550...650
Speed rpm : 1000
Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 400
Rack travel in mm : 3,9...4,1
: (3,8...4,2)

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.80...12.90
2nd speed rpm : 1400
Rack travel in m: 12.20...12.50
3rd speed rpm : 2000
Rack travel in m: 11.40...11.70
4th speed rpm : 500 *
Rack travel in m: 12.00...12.30 *
5th speed rpm : 800**
Rack travel in m: 12.40...12.70**

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 1000
Pressure hPa : 950
Rack travel mm : 0.00...0.20

Measurement

Speed 1/min : 1000
1st pressure hPa : 900
Rack travel in m: 0.50...0.70
2nd pressure hPa : 750
Rack travel in m: 1.80...2.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1400
Del.quantity cm³/ : 39.5...41.0
1000 s: (38.5...42.0)
Spread cm³ : 2.50
1000 s: (3.0)
Aneroid pressure h: 1100

Speed rpm : 2000
Del.quantity cm³/ : 39.5...41.5
1000 s: (38.5...42.5)
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 500 *
Del.quantity cm³/ : 34.5...36.0 *
1000 s: (33.5...37.0) *
Spread cm³ : 2.50
1000 s: (3.00)
Aneroid pressure h: 1100
Speed rpm : 800**
Del.quantity cm³/ : 37.5...39.0 **
1000 s: (36.5...40.0)**
Spread cm³ : 2.50
1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 52.0...0.0
1000 s: (52.0...0.0)
Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version
Aneroid pressure h: 1100
Speed rpm : 2200
Rack travel in mm : 7.00...7.50
Del.quantity cm³/ : 22.0...26.0
1000 s: (21.0...27.0)
Spread cm³ : 2.50
1000 s: (3.00)

LOW IDLE

Speed rpm : 335
Rack travel in mm : 5.10...5.30
Del.quantity cm³/ : 5.0...6.0
1000 s: (4.5...9.0)
Spread cm³ : 1.00
1000 s: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop
Speed rpm : 360
Rack travel in mm : (12,3...13,7)
Del.quantity cm³/ : -
1000 s: (33,0...41,0)
Current A : 1,8
Control lever at full-load stop
Speed rpm : 2500
Rack travel in mm : 0,0...1,0

Current

short-duration A : 3,0
Starting test
Speed rpm : 100
Del.quantity cm³/ : -
min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between
max. and min. value = max. 1° angular
displacement of cam

Start-of-delivery sensor system:
adjustment and blocking with device
KDEP 1077 = 15.3°...15.7°
(15.2...15.8°) angular displacement of
cam following start of delivery of
cylinder no. 1.

* Setting point for negative torque
control - negative retainer behind

** Reference measurement:

Control-rod travel and delivery too

Large - position spiral spring

Control-rod travel and delivery too

small - position spiral spring upwards

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.

With $n = 335$ 1/min. and $p_u = 450$ mbar,

control rod must move quickly to

control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 2,4 V4
 Edition : 28.05.90
 Replaces : 06.09.88
 Test oil : ISO-4113

 Combination no. : 0 400 074 924

 Injection pump
 Pump designation : PES4M55C32ORS104-1
 EP type number : 0 410 054 963
 Governor
 Governor design. : RSF375/2200M12-1
 Governor no. : 0 420 021 064

Customer-spec. information
 Customer : MB-NFZ

Engine : OM616 -2.4 l-

1st version kW : 55.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 012

Inlet press., bar : 1.00

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 1.70...1.80
 : (1.65...1.85)
 Rack travel in mm : 20.00...0.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 13.40...13.50

Del. quantity cm³/ : 3.7...3.8

100 s: (3.6...3.9)

Spread cm³ : 0.2

100 s: (0.3)

2nd speed rpm : 375.0

Rack travel in mm : 6.5...6.7

Del. quantity cm³/ : 0.6...0.7

100 s: (0.5...0.9)

Spread cm³ : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Del. quantity : 37.0...38.0

1000 : (36.0...39.0)

Spread cm³ : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0

3rd rack travel in: 6,5...6,9

Speed rpm : 2350

4th rack travel in: 2950

Speed rpm : 0.00...1.00

SET IDLE CONTROL LEVER

POSITION

Speed rpm : 1000

Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 8...12

Setting point w/out bumper spring

Speed rpm : 375

Rack travel in mm : 6.6

Testing:

Speed rpm : 250
 Minimum rack travel: 10.50
 Speed rpm : 375
 Rack travel in mm : 6.50...6.70
 Rack travel in mm : 2.00
 Speed rpm : 750...850
 Speed rpm : 1000
 Maximum rack travel: 1.50

SET IDLE AUXILIARY SPRING

Speed rpm : 450
 Rack travel in mm : 5,1...5,3
 : (5,0...5,4)

TORQUE CONTROL

Torque control curve - 1st version
 1st speed rpm : 1000
 Rack travel in m: 13.40...13.50
 2nd speed rpm : 1600
 Rack travel in m: 13.00...13.20
 3rd speed rpm : 2100
 Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1600
 Del.quantity cm³/ : 38.5...40.5
 1000 s: (37.5...41.5)
 Spread cm³ : 2.50
 1000 s: (3.0)
 Speed rpm : 2100
 Del.quantity cm³/ : 37.5...39.5
 1000 s: (36.5...40.5)
 Spread cm³ : 2.50
 1000 s: (3.00)

STARTING FUEL DELIVERY

Speed rpm : 100
 Del.quantity cm³/ : 52.0...0.0
 1000 s: (52.0...0.0)
 Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

Speed rpm : 2350
 Rack travel in mm : 6.50...6.90
 Del.quantity cm³/ : 13.0...17.0
 1000 s: (12.0...19.0)
 Spread cm³ : 2.50
 1000 s: (3.00)

LOW IDLE

Speed rpm : 375
 Rack travel in mm : 6.50...6.70
 Del.quantity cm³/ : 6.0...7.0
 1000 s: (5.5...9.0)
 Spread cm³ : 1.00
 1000 s: (1.50)

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.
 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
 Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE

-Control lever at idle stop.
 With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 4,1 d 1
 Edition : 30.05.90
 Replaces : 21.4.89
 Test oil : ISO-4113

Combination no. : 0 400 864 062

Injection pump
 Pump designation : PES4A85D410/3RS2638
 EP type number : 0 410 884 950
 Governor
 Governor design. : RSV325...1150A2C707-
 2L
 Governor no. : 0 420 232 439

Customer-spec. information
 Customer : KHD

Engine : BF4L913

1st version kW : 67.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60
 : (2.45...2.65)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 8.1...8.2

100 s: (7.9...8.4)

Spread cm³ : 0.3

100 s: (0.4)

2nd speed rpm : 325.0

Rack travel in mm : 8.1...8.3

Del.quantity cm³/ : 1.0...1.6

100 s: (0.8...1.8)

Spread cm³ : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

Del.quantity : 81.5...82.5

1000 : (79.5...84.5)

Spread cm³ : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 11.70

Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1110...1140

3rd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1340
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 7.7

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 325
Rack travel in mm : 8.10...8.30
Rack travel in mm : 2.00
Speed rpm : 640...700

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1000
Rack travel in m: 12.70...12.80
2nd speed rpm : 500
Rack travel in m: 13.70...13.80
3rd speed rpm : 800
Rack travel in m: 13.40...13.60
4th speed rpm : 900
Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.10...12.20
2nd pressure hPa : 450
Rack travel in m: 13.30...13.40
3rd pressure hPa : 290
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 800
Del.quantity cm³/ : 86.5...88.5
1000 s: (84.0...91.0)
Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm³/ : 61.5...63.5
1000 s: (59.5...65.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 105.0...115.0
1000 s: (102.0...118.0)
Rack travel in mm : 17.10...17.30

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

APPLICATION

Installation 2300

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : KHD 6,1 u
Edition : 21.05.90
Replaces : 1.2.90
Test oil : ISO-4113

Combination no. : 0 400 866 152

Injection pump
Pump designation : PES6A85D410/3RS2783
EP type number : 0 410 886 893
Governor
Governor design. : RSV325...1250A5C2239

Governer no. : 0 420 232 526

Customer-spec. information
Customer : KHD

Engine : F6L912F

1st version kw : 82.0
Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder
assembly : 0 681 343 009

Opening
pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.95...3.05
: (2.90...3.10)

Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1235

Rack travel in mm : 11.80...11.90

Del.quantity cm3/ : 6.9...7.0

100 s: (6.7...7.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0

Rack travel in mm : 7.4...7.6

Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1235

Del.quantity : 69.5...70.5

1000 : (67.5...72.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.80

Speed rpm : 1275...1285

2nd rack travel in: 4.00

Speed rpm : 1330...1360

3rd rack travel in: 4.00

Speed rpm : 1345...1375
4th rack travel in: 1510
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 69...77
Setting point w/out bumper spring
Speed rpm : 325
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 420...480

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1235
Rack travel in m: 11.80...11.90
2nd speed rpm : 750
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 750
Del.quantity cm3/ : 54.5...56.5
1000 s: (52.0...59.0)
Speed rpm : 1000
Del.quantity cm3/ : 63.0...65.0
1000 s: (60.5...67.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1275...1285

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 105.0...115.0
1000 s: (102.0...118.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 7.40...7.60
Del.quantity cm3/ : 8.0...14.0
1000 s: (6.0...16.0)

Spread cm3 : 2.50
1000 s: (4.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : HAN 10,8 f8
Edition : 17.05.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 401 076 010
Injection pump
Pump designation : PE6A100D32ORS3030-1
EP type number : 0 411 006 019
Governor
Governor design. : RSV350...1100A8C2232
-1R
Governor no. : 0 420 233 252

Customer-spec. information
Customer : HANOMAG

Engine : D964T

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42
Overflow valve : 1 417 413 000
Inlet press., bar : 1.50
Test nozzle holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test lines : 1 680 750 003
Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 1.80...1.90
: (1.75...1.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50
& maximum rack tra: 21.00
Difference ° CS : 5.50...6.50

BASIC SETTING

1st speed rpm : 1080
Rack travel in mm : 10.70...10.80
Del.quantity cm3/ : 13.9...14.1
100 s: (13.7...14.3)
Spread cm3 : 0.3
100 s: (0.6)

2nd speed rpm : 350.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/ : 1.1...1.7
100 s: (0.8...1.9)
Spread cm3 : 0.3
100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1080
Aneroid pressure h: 700
Del.quantity : 139.0...141.0
1000 : (137.0...143.0)
Spread cm3 : 3.50
1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 101...109

Testing:

1st rack travel in: 9.70
Speed rpm : 1120...1130
2nd rack travel in: 4.00
Speed rpm : 1160...1190
3rd rack travel in: 4.00
Speed rpm : 1175...1205
4th rack travel in: 1335
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 70...78
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 6.10...6.30
Rack travel in mm : 2.00
Speed rpm : 435...495

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1080
Rack travel in m: 10.70...10.80
2nd speed rpm : 550
Rack travel in m: 10.70...10.80
5th speed rpm : 400
Rack travel in m: 11.90...12.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 550
Pressure hPa : -
Rack travel mm : 9.20...9.30

Measurement

Speed 1/min : 550

1st pressure hPa : 275
Rack travel in m: 9.60...9.80
2nd pressure hPa : 450
Rack travel in m: 10.40...10.50
3rd pressure hPa : 700
Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 550
Del.quantity cm3/ : 92.0...94.0
1000 s: (90.0...96.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.70
Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...235.0
1000 s: (217.0...238.0)
Rack travel in mm : 19.50...21.00

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 13,8 f
 Edition : 02.01.90
 Replaces : 23.6.89
 Test oil : ISO-4113

Combination no. : 0 401 846 891

Injection pump
 Pump designation : PE6P120A720RS3216
 EP type number : 0 411 826 781
 Governor
 Governor design. : RQV300...975PA898K
 Governor no. : 0 421 815 197

Customer-spec. information
 Customer : IVECO-UNIC

Engine : 8210.42.269

1st version kW : 261.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60
 : (3.45...3.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 23.2...23.4

100 s: (22.9...23.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6

Del.quantity cm³/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.60...2.00

2nd speed rpm : 400
 travel mm : 3.20...4.00

3rd speed rpm : 750
 travel mm : 6.70...7.10

4th speed rpm : 975
 travel mm : 9.60...9.80

5th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1015

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

Del.quantity : 232.0...234.0
1000 : (229.0...237.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 11.80
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 71...79

Testing:

Speed rpm : 100
Minimum rack travel: 6.00
Speed rpm : 300
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

Speed rpm : 280...400

TORQUE CONTROL

Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.80...12.90
2nd speed rpm : 830
Rack travel in m: 12.40...12.60
3rd speed rpm : 500
Rack travel in m: 11.30...11.50
4th speed rpm : 350
Rack travel in m: 11.20...11.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 975
Pressure hPa : 1200
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 700

Rack travel in m: 11.90...12.00
3rd pressure hPa : 290
Rack travel in m: 9.60...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 500
Del.quantity cm³/ : 182.0...188.0
1000 s: (179.0...191.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 109.0...111.0
1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9a41
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 036 080
 Injection pump
 Pump designation : PES6P120A720/3LS470-
 2
 EP type number : 0 412 026 050
 Governor
 Governor design. : RQ300/1100PA813-11
 Governor no. : 0 421 801 514

Customer-spec. information
 Customer : MAN

Engine : D2866LF

1st version kW : 243.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 750
 Rack travel in mm : 11.10...11.20
 Del.quantity cm³/ : 20.2...20.4
 100 s: (19.9...20.7)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.1)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 750
 Aneroid pressure h: 1000
 Del.quantity : 202.0...204.0
 1000 : (199.0...207.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70
Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack trave: 6.30
Speed rpm : 300
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 340...380

TORQUE CONTROL

Dimension a mm : 0.50
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 10.70...10.90
2nd speed rpm : 750
Rack travel in m: 11.90...12.20
3rd speed rpm : 875
Rack travel in m: 11.80...12.00
4th speed rpm : 950
Rack travel in m: 11.20...11.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 11.10...11.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 85
Rack travel in m: 9.30...9.40
3rd pressure hPa : 280
Rack travel in m: 10.50...10.90

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

A27

Aneroid pressure h: 1000
Speed rpm : 1100
Del.quantity cm³/ : 205.0...209.0
1000 s: (202.0...212.0)
Aneroid pressure h: 1000
Speed rpm : 650
Del.quantity cm³/ : 198.0...204.0
1000 s: (195.0...207.0)
Aneroid pressure h: 280
Speed rpm : 500
Del.quantity cm³/ : 184.0...196.0
1000 s: (181.0...199.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...134.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.70...4.90
Del.quantity cm³/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7756

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 s
 Edition : 12.06.90
 Replaces :
 Test oil : ISO-4113
 Combination no. : 0 402 036 069
 Injection pump
 Pump designation : PES6P120A720LS470
 EP type number : 0 412 026 046
 Governor
 Governor design. : RQ250/1050PA767
 Governor no. : 0 421 801 311

Customer-spec. information

Customer : MAN
 Engine : D2866LUE/DSB
 1st version kW : 250.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 10.50...10.60
 Del. quantity cm³/ : 19.8...20.0
 100 s: (19.5...20.3)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250
 Rack travel in mm : 5.2...5.4
 Del. quantity cm³/ : 1.2...1.8
 100 s: (0.9...2.1)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1000
 Del. quantity : 198.0...200.0
 1000 : (195.0...203.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 9.50

Speed rpm : 1145...1160
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm^a : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.3

Testing:

Speed rpm : 100
Minimum rack trave: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40
Rack travel in mm : 2.00
Speed rpm : 315...355

TORQUE CONTROL

Dimension a mm : 0.55
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 10.50...10.60
2nd speed rpm : 750
Rack travel in m: 12.00...12.10
3rd speed rpm : 865
Rack travel in m: 11.60...11.80
4th speed rpm : 985
Rack travel in m: 9.80...10.10

START CUT-OUT

Speed 1/min : 190 (210)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

*Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 225.0...245.0
1000 s: (221.0...249.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 12.0...18.0
1000 s: (9.0...21.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y 1
 Edition : 08.06.90
 Replaces : 2.5.90
 Test oil : ISO-4113
 Combination no. : 0 402 076 722
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534
 Governor no. : 0 421 833 275

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076 HF

1st version kW : 194.0
 2nd version kW : 2200

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

 Rack travel in mm : 12.00...12.10

 Del.quantity cm³/ : 15.6...15.8
 100 s : (15.4...16.1)

 Spread cm³ : 0.4
 100 s : (0.6)

2nd speed rpm : 400.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm³/ : 1.7...2.2
 100 s : (1.5...2.5)
 Spread cm³ : 0.6
 100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 1200
 Del.quantity : 156.5...158.5
 1000 : (154.0...161.0)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version
 Control lever
 position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 750
Rack travel in m: 12.80...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 10.30...10.50

Measurement
Speed 1/min : 500

1st pressure hPa : 605
Rack travel in m: 11.00...11.10
2nd pressure hPa : 780
Rack travel in m: 12.10...12.50
3rd pressure hPa : 1200
Rack travel in m: 12.80...13.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 174.5...179.5
1000 s: (172.0...182.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm³/ : 117.5...121.5
1000 s: (114.5...124.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32035

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,6 y
 Edition : 09.07.90
 Replaces : 2.5.90
 Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534-
 1
 Governor no. : 0 421 833 276

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6466 AF-050

1st version kW : 180.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm³/ : 15.0...15.2

100 s : (14.7...15.4)

Spread cm³ : 0.4

100 s : (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.7...2.2

100 s : (1.5...2.5)

Spread cm³ : 0.6

100 s : (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1200

Del.quantity : 150.0...152.0

1000 : (147.5...154.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1200...1210
4th rack travel in: 1350
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 11.80...11.90
2nd speed rpm : 700
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 12.60...12.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.40...10.60
2nd pressure hPa : 720
Rack travel in m: 11.00...11.10
3rd pressure hPa : 895
Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 173.5...178.5
1000 s: (171.0...181.0)
Aneroid pressure h: -
Speed rpm : 800
Del.quantity cm3/ : 120.0...124.0
1000 s: (117.0...127.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.80
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control
spring retainer with 0,5 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 7,7 b
 Edition : 17.05.90
 Replaces : 2.5.90
 Test oil : ISO-4113
 Combination no. : 0 402 076 727
 Injection pump
 Pump designation : PES6P120A72ORS3203
 EP type number : 0 412 026 728
 Governor
 Governor design. : RSV400...1100P2A534-
 2
 Governor no. : 0 421 833 290

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 168.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 457 413 010

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X3.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65
 : (3.50...3.70)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 15.3...15.5

100 s: (15.1...15.7)

Spread cm³ : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm³ : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 153.5...155.5

1000 : (151.5...157.5)

Spread cm³ : 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testing:

1st rack travel in: 11.00
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1195...1205
3rd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 16...24
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.4

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 4.80...5.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.00...12.10
2nd speed rpm : 700
Rack travel in m: 13.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.30...11.50
2nd pressure hPa : 510
Rack travel in m: 11.80...11.90
3rd pressure hPa : 645
Rack travel in m: 12.40...12.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/ : 178.5...182.5
1000 s: (176.5...184.5)
Aneroid pressure h: -
Speed rpm : 800

Del.quantity cm3/ : 138.5...142.5
1000 s: (136.5...144.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (85.0...115.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 17.5...22.5
1000 s: (15.0...25.0)
Spread cm3 : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control
spring retainer with 1 mm less
control-rod travel. Increase in
full-load delivery with torque-control
spring retainer.

Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 i
 Edition : 17.05.90
 Replaces : 1.2.90
 Test oil : ISO-4113

Combination no. : 0 402 076 735

Injection pump
 Pump designation : PES6P110A72ORS3242
 EP type number : 0 412 016 731
 Governor
 Governor design. : RSV400...1050POA513-
 1
 Governor no. : 0 421 833 327

Customer-spec. information
 Customer : JOHN DEERE

Engine : 6619AE03

1st version kw : 212.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 457 413 010

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 200...215

Test nozzle holder
 assembly : 1 688 901 103

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.45...3.55
 : (3.40...3.60)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 20.8...21.0
 100 s: (20.5...21.2)

Spread cm³ : 0.4
 100 s: (0.7)

2nd speed rpm : 400.0
 Rack travel in mm : 6.8...7.0
 Del.quantity cm³/ : 4.0...4.5
 100 s: (3.7...4.7)

Spread cm³ : 0.9
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3

Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 800
 Del.quantity : 208.0...210.0
 1000 : (205.5...212.5)

Spread cm³ : 4.00
 1000 : (7.50)

RATED SPEED

1st version

Control Lever
position degrees: 37...45

Testing:
1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1170
3rd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control Lever
position degrees: 17...25
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 6.4

Testing:
Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 6.80...7.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 14.00...14.20
2nd speed rpm : 600
Rack travel in m: 14.20...14.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 800
Rack travel mm : 14.20...14.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.40...11.60
2nd pressure hPa : 350
Rack travel in m: 13.40...13.50
3rd pressure hPa : 170
Rack travel in m: 12.10...12.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 800
Speed rpm : 600

Del.quantity cm³/ : 222.0...227.0
1000 s: (219.5...229.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 144.5...148.5
1000 s: (141.5...151.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...175.0
1000 s: (140.0...180.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 6.80...7.00
Del.quantity cm³/ : 40.0...45.0
1000 s: (37.5...47.5)
Spread cm³ : 9.00
1000 s: (12.00)

Remarks:

: JOHN DEERE # RE42224
Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1 with control-rod
travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DEE 10,1 j
 Edition : 17.05.90
 Replaces : 2.5.90
 Test oil : ISO-4113

 Combination no. : 0 402 076 738

 Injection pump
 Pump designation : PES6P110A72ORS3251
 EP type number : 0 412 016 733
 Governor
 Governor design. : RSV400...1050POA513-
 1
 Governor no. : 0 421 833 327

 Customer-spec. information
 Customer : JOHN DEERE

 Engine : 6619AE03

 1st version kW : 212.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve
 : 1 457 413 010

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 200...215

 Test nozzle holder
 assembly : 1 688 901 103

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,7

 Test lines : 1 680 750 008

 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

 Prestroke mm : 3.45...3.55
 : (3.40...3.60)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

 Phasing : 0-60-120-180-240-300

 Tolerance + - ° : 0.50 (0.75)

 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

 Rack travel in mm : 12.70...12.80

 Del.quantity cm³/ : 19.6...19.8
 100 s: (19.4...20.0)

 Spread cm³ : 0.4
 100 s: (0.6)

 2nd speed rpm : 400.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm³/ : 3.2...3.7
 100 s: (3.0...3.9)
 Spread cm³ : 0.6
 100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 900
 Del.quantity : 196.5...198.5
 1000 : (194.5...200.5)
 Spread cm³ : 4.00
 1000 : (6.50)

RATED SPEED

1st version

Control lever
position degrees: 40...48

Testing:

1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1170
3rd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 19...27
Setting point w/out bumper spring
Speed rpm : 400
Rack travel in mm : 4.9

Testing:

Speed rpm : 100
Minimum rack travel: 19.00
Speed rpm : 400
Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.70...12.80
2nd speed rpm : 600
Rack travel in m: 13.70...13.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.80...10.00
2nd pressure hPa : 475
Rack travel in m: 12.70...12.80
3rd pressure hPa : 225
Rack travel in m: 10.80...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600

Del.quantity cm³/ : 236.5...240.5
1000 s: (234.5...242.5)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 144.0...148.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...210.0
1000 s: (175.0...215.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 32.0...37.0
1000 s: (30.0...39.0)
Spread cm³ : 6.00
1000 s: (8.00)

Remarks:

: JOHN DEERE # RE42224
Starting/full-load transition speed
from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular
displacement of the cam after start of
delivery of cylinder 1 with control-rod
travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 31,8 c3
 Edition : 29.05.90
 Replaces : 1.2.90
 Test oil : ISO-4113
 Combination no. : 0 402 630 805
 Injection pump
 Pump designation : PE12P120A120RS7106
 EP type number : 0 412 620 800
 Governor
 Governor design. : RQV350...900PA935-1
 Governor no. : 0 421 813 820

Customer-spec. information
 Customer : BAUDOUIN

Engine : V12P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 074
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 12- 9- 4- 5- 8-
 11- 2- 3- 10- 7- 6

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 12.00...12.10
 Del.quantity cm³/ : 33.9...34.1
 100 s: (33.6...34.4)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.6...5.0
 Del.quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.70
 2nd speed rpm : 500
 travel mm : 3.00...3.60
 3rd speed rpm : 700
 travel mm : 5.30...5.90
 4th speed rpm : 900
 travel mm : 7.70...7.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 930
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Del.quantity : 339.0...341.0
 1000 : (336.0...344.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 86...94

Testing:
Speed rpm : 100
Minimum rack trave: 6.30
Speed rpm : 350
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00

CONSTANT REGULATION
Speed rpm : 330...450

START CUT-OUT

Speed 1/min : 270 (290)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.00
Speed rpm : 940...950

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 12,9 c
 Edition : 02.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 636 800
 Injection pump
 Pump designation : PE6P130A720/3LS7827
 EP type number : 0 412 636 814
 Governor
 Governor design. : RQV400...1150PA937
 Governor no. : 0 421 813 823

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8262.43.001

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 6- 5- 4- 3- 2

Phasing : 0-75-120-195-240-315
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 11.70...11.80
 Del.quantity cm³/ : 26.8...27.1
 100 s: (26.4...27.4)
 Spread cm³ : 0.6
 100 s: (1.0)
 2nd speed rpm : 400.0
 Rack travel in mm : 4.8...5.2
 Del.quantity cm³/ : 2.1...2.7
 100 s: (1.7...3.1)
 Spread cm³ : 1.0
 100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
 travel mm : 2.60...3.00
 2nd speed rpm : 500
 travel mm : 4.20...4.80
 3rd speed rpm : 650
 travel mm : 5.80...6.40
 4th speed rpm : 900
 travel mm : 6.70...7.00
 5th speed rpm : 1350
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 850
 Rack travel in mm : 16.50...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1150
 Aneroid pressure h: 1200
 Del.quantity : 268.0...271.0
 1000 : (264.5...274.5)

Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 106...114

Testing:
1st rack travel in: 10.70
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 400...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 11.70...11.80

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 650
Rack travel in m: 10.70...10.80
3rd pressure hPa : 250
Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 700
Del.quantity cm3/ : 275.0...282.0
1000 s: (275.0...282.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 165.0...168.0
1000 s: (161.5...171.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1190...1200

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.20
Del.quantity cm3/ : 21.0...27.0
1000 s: (17.0...31.0)
Spread cm3 : 10.00
1000 s: (14.00)

Remarks:

APPLICATION

Special-purpose vehicle

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 16,3 b
 Edition : 02.02.90
 Replaces : 2.10.89
 Test oil : ISO-4113

Combination no. : 0 402 638 803

Injection pump
 Pump designation : PE8P120A12ORS7141
 EP type number : 0 412 628 823
 Governor
 Governor design. : RQ750PA871
 Governor no. : 0 421 801 404

Customer-spec. information
 Customer : PERKINS

Engine : CV8-320 G

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 6- 5- 4- 8-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.40...14.50

Del.quantity cm³/ : 33.3...33.5
 100 s : (33.0...33.8)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 7.5...7.7
 Del.quantity cm³/ : 3.6...4.2
 100 s : (3.3...4.5)

Spread cm³ : 0.8
 100 s : (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 333.0...335.0
 1000 : (330.0...338.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 77...85

Testing:
 1st rack travel in: 13.40
 Speed rpm : 750...755

2nd rack travel in: 4.00
 Speed rpm : 795...805

4th rack travel in: 900
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 750...755

Remarks:

:

APPLICATION

Generator



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 x
 Edition : 12.02.90
 Replaces : 9.3.87
 Test oil : ISO-4113

Combination no. : 0 402 640 804

Injection pump
 Pump designation : PE12P120A320LS7807
 EP type number : 0 412 620 806
 Governor
 Governor design. : RQV350...1050PA842
 Governor no. : 0 421 813 587

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 390.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del. quantity cm³/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.7

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.2)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.10

2nd speed rpm : 700
 travel mm : 4.00...4.40

3rd speed rpm : 1100
 travel mm : 6.80...7.20

4th speed rpm : 1200
 travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 660
Del.quantity : 199.0...201.0
1000 : (196.0...204.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:

1st rack travel in: 11.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack trave: 7.10
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION

Speed rpm : 400...600

TORQUE CONTROL

Dimension a mm : 1.50
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.00...12.20
2nd speed rpm : 975
Rack travel in m: 12.60...12.80
3rd speed rpm : 875
Rack travel in m: 13.20...13.40
4th speed rpm : 700
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 660
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : -
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 170.0...174.0
1000 s: (167.0...177.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm³/ : 204.0...208.0
1000 s: (201.0...211.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 150.0...154.0
1000 s: (147.0...157.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.40...5.74

Del. quantity cm³/ : 16.0...22.0
1000 s: (13.0...22.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 v 1
 Edition : 04.05.90
 Replaces : 24.8.87
 Test oil : ISO-4113

Combination no. : 0 402 640 806

Injection pump
 Pump designation : PE12P120A320LS7806
 EP type number : 0 412 620 805
 Governor
 Governor design. : RQV350...1000PA835-1
 Governor no. : 0 421 813 590

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 419.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 : 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.30...13.50

Del.quantity cm³/ : 18.7...18.9

100 s: (18.4...19.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.9...6.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.10

2nd speed rpm : 700

travel mm : 4.90...5.30

3rd speed rpm : 1050

travel mm : 8.00...8.40

4th speed rpm : 1200

travel mm : 9.40...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 650
Del.quantity : 187.0...189.0
1000 : (184.0...192.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.70
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1110...1140
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:
Speed rpm : 200
Minimum rack trave: 7.50
Speed rpm : 350
Rack travel in mm : 5.90...6.30

CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 13.30...13.50

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 11.70...11.90
2nd pressure hPa : 420
Rack travel in m: 12.60...12.80
3rd pressure hPa : 500
Rack travel in m: 10.60...10.90

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

B22

1st version
Aneroid pressure h: 650
Speed rpm : 1000
Del.quantity cm³/ : 182.0...186.0
1000 s: (179.0...189.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 650
Speed rpm : 900
Del.quantity cm³/ : 196.0...200.0
1000 s: (193.0...203.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 125.0...129.0
1000 s: (122.0...132.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

APPLICATION

Rail car

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 b
 Edition : 02.02.90
 Replaces : 7.7.89
 Test oil : ISO-4113

Combination no. : 0 402 640 812

Injection pump
 Pump designation : PE12P120A520LS7820
 EP type number : 0 412 620 814
 Governor
 Governor design. : RQV350...1150PA870-4
 Governor no. : 0 421 813 717

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kw : 736.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.30...14.40

Del.quantity cm3/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...6.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.40

2nd speed rpm : 500
 travel mm : 3.00...3.50

3rd speed rpm : 800
 travel mm : 4.30...4.80

4th speed rpm : 1200
 travel mm : 8.30...8.80

5th speed rpm : 1250
 travel mm : 9.30...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 312.0...314.0
1000 : (309.0...317.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 13.30
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.80...8.10

Measurement

Speed 1/min : 500
1st pressure hPa : 300
Rack travel in m: 9.10...9.20
2nd pressure hPa : 1100
Rack travel in m: 13.40...13.70

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm³/ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm³/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.30
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 b2
 Edition : 17.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 815
 Injection pump
 Pump designation : PE12P120A520LS7824
 EP type number : 0 412 620 816
 Governor
 Governor design. : RQV250...1150PA902-4
 Governor no. : 0 421 813 870

Customer-spec. information
 Customer : MAN

Engine : D2842LYE

1st version kW : 735.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 13.60...13.70
 Del.quantity cm³/ : 30.1...30.3
 100 s: (29.8...30.6)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 9.10...9.30
 Del.quantity cm³/ : 14.9...15.1
 100 s: (14.6...15.4)
 Spread cm³ : 0.8
 100 s: (1.2)
 3rd speed rpm : 300
 Rack travel in mm : 7.20...7.40
 Del.quantity cm³/ : 5.2...6.0 *
 100 s: (-)
 Spread cm³ : -
 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.60
 2nd speed rpm : 450
 travel mm : 2.90...3.50
 3rd speed rpm : 750
 travel mm : 5.60...6.00
 4th speed rpm : 1150
 travel mm : 9.50...9.70
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1200
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h : 1300
Del.quantity : 301.0...303.0
1000 : (298.0...306.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.60
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 100
Minimum rack trave: 8.90
Speed rpm : 300
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.60...13.70

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 100
Rack travel in m: 9.50...9.60
3rd pressure hPa : 470
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Aneroid pressure h: -
Speed rpm : 500
Rack travel in mm : 8.50
Del.quantity cm³/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.20...7.40
Del.quantity cm³/ : 52.0...60.0
1000 s: (-)

Remarks:

: MAN-NR. 2-7960

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 b1
 Edition : 26.06.90
 Replaces : 7.7.89
 Test oil : ISO-4113
 Combination no. : 0 402 640 816
 Injection pump
 Pump designation : PE12P120A520LS7824
 EP type number : 0 412 620 816
 Governor
 Governor design. : RQV250...1150PA902-3
 Governor no. : 0 421 813 761

Customer-spec. information
 Customer : MAN

Engine : D2842LXE

1st version kW : 662.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
 Rack travel in mm : 12.00...12.10
 Del.quantity cm3/ : 24.9...25.1
 100 s: (24.6...25.4)
 Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 500
 Rack travel in mm : 8.90...9.10
 Del.quantity cm3/ : 14.9...15.1
 100 s: (14.6...15.4)
 Spread cm3 : 0.8
 100 s: (1.2)
 3rd speed rpm : 250
 Rack travel in mm : 7.30...7.50
 Del.quantity cm3/ : 5.2...6.0 *
 100 s: (-)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.90...1.10
 2nd speed rpm : 450
 travel mm : 2.90...3.50
 3rd speed rpm : 750
 travel mm : 5.50...5.90
 4th speed rpm : 1150
 travel mm : 9.20...9.40
 5th speed rpm : 1400
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1225
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 249.0...251.0
1000 : (246.0...254.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 58...66

Testing:

1st rack travel in: 11.00
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1275...1315
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 16...24

Testing:

Speed rpm : 100
Minimum rack trave: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.10
2nd pressure hPa : 100
Rack travel in m: 9.30...9.40
3rd pressure hPa : 400
Rack travel in m: 11.30...11.70

START CUT-OUT

Speed 1/min : 170 (190)

C01

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm3/ : - **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500**
Rack travel in mm : <7.00...0.00
Del.quant²y cm3/ : <0
1000 s: (-)

2nd version

Speed rpm : 500**
Rack travel in mm : <7.50
Del.quantity cm3/ : <50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.20
Del.quantity cm3/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 2-7959

* applies to cylinders 4, 5, 6, 8, 10
and 12
** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 c
 Edition : 02.02.90
 Replaces : 1.9.89
 Test oil : ISO-4113

Combination no. : 0 402 640 817

Injection pump
 Pump designation : PE12P120A520LS7826
 EP type number : 0 412 620 817
 Governor
 Governor design. : RQV350...1150PA870-4
 Governor no. : 0 421 813 717

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 736.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 15.20...15.30

Del.quantity cm³/ : 31.2...31.4

100 s: (30.9...31.7)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 350.0

Rack travel in mm : 5.3...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.40

2nd speed rpm : 500
 travel mm : 3.00...3.50

3rd speed rpm : 800
 travel mm : 4.30...4.80

4th speed rpm : 1200
 travel mm : 8.30...8.80

5th speed rpm : 1250
 travel mm : 9.30...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1800
Del.quantity : 312.0...314.0
1000 : (309.0...317.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version

Control lever
position degrees: 113...121

Testing:

1st rack travel in: 14.20
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:

Speed rpm : 250
Minimum rack trave: 7.30
Speed rpm : 350
Rack travel in mm : 5.30...5.90

CONSTANT REGULATION

Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.20...8.50

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 9.60...9.70
2nd pressure hPa : 1100
Rack travel in m: 13.80...14.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

CO4

1st version

Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm³ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: 1800
Speed rpm : 1150
Del.quantity cm³/ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm³ : 10.00
1000 s: (15.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 124.0...126.0
1000 s: (121.0...129.0)
Spread cm³ : 10.00
1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 330.0...350.0
1000 s: (326.0...354.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 e
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 818
 Injection pump
 Pump designation : PE12P120A520LS7829
 EP type number : 0 412 620 821
 Governor
 Governor design. : RQV250...1150PA943
 Governor no. : 0 421 813 850

Customer-spec. information
 Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 : 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 : 180-225-240-285-300-
 Phasing : 345
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del. quantity cm³/ : 30.4...30.6

100 s: (30.1...30.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm : 9.10...9.30

Del. quantity cm³/ : 14.9...15.1

100 s: (14.6...15.4)

Spread cm³ : 0.8

100 s: (1.2)

3rd speed rpm : 250

Rack travel in mm : 7.30...7.50

Del. quantity cm³/ : 5.2...5.6 *

100 s: (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.80...1.20

2nd speed rpm : 450

travel mm : 2.90...3.50

3rd speed rpm : 750

travel mm : 5.50...5.90

4th speed rpm : 1150

travel mm : 9.20...9.40

5th speed rpm : 1400

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 78...82

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 280...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500
1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 100
Rack travel in m: 9.50...9.60
3rd pressure hPa : 470
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.10...8.30
Del.quantity cm³/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7023

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 21,0 e1
Edition : 17.05.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 640 818
Injection pump
Pump designation : PE12P120A520LS7829
EP type number : 0 412 620 821
Governor
Governor design. : RQV250...1150PA943-1
Governor no. : 0 421 813 869

Customer-spec. information
Customer : MAN

Engine : D2842LZE

1st version kW : 809.0
Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60
: (4.45...4.65)
Rack travel in mm : 9.00...12.00
Firing order : 12- 1- 5- 9- 8- 3-
4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
180-225-240-285-300-
Phasing : 345
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150
Rack travel in mm : 13.80...13.90
Del.quantity cm3/ : 30.4...30.6
100 s : (30.1...30.9)
Spread cm3 : 0.5
100 s : (0.9)

2nd speed rpm : 500
Rack travel in mm : 9.10...9.30
Del.quantity cm3/ : 14.9...15.1
100 s : (14.6...15.4)
Spread cm3 : 0.8
100 s : (1.2)
3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 5.2...5.6 *
100 s : (-)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.20...1.60
2nd speed rpm : 450
travel mm : 2.90...3.50
3rd speed rpm : 750
travel mm : 5.70...6.10
4th speed rpm : 1150
travel mm : 9.50...9.70
5th speed rpm : 1400
travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1225
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150
Aneroid pressure h: 1300
Del.quantity : 304.0...306.0
1000 : (301.0...309.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 118...126

Testing:

1st rack travel in: 12.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1285...1315
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 79...87

Testing:

Speed rpm : 100
Minimum rack travel: 8.90
Speed rpm : 250
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

Speed rpm : 280...410

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1300
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.10...9.30
2nd pressure hPa : 100
Rack travel in m: 9.50...9.60
3rd pressure hPa : 470
Rack travel in m: 12.00...12.40

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 100.0...120.0 *
1000 s: (-)

Speed rpm : 100
Del.quantity cm³/ : - **
1000 s: (-)
Rack travel in mm : 17.50

HIGH IDLE

1st version

Speed rpm : 500
Rack travel in mm : < 7.00
Del.quantity cm³/ : - **
1000 s: (-)

2nd version

Speed rpm : 500
Rack travel in mm : < 7.50
Del.quantity cm³/ : < 50.0
1000 s: (-)

3rd version

Speed rpm : 500
Rack travel in mm : 8.10...8.30
Del.quantity cm³/ : 125.0
1000 s: (-)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 52.0...60.0 *
1000 s: (-)

Remarks:

: MAN-NR. 3-7023

* applies to cylinders 4, 5, 6, 8, 10
and 12

** applies for cylinders 1, 2, 3, 7, 9
and 11

APPLICATION

Ship



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 x 2
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 819
 Injection pump
 Pump designation : PE12P120A320LS7807-3
 EP type number : 0 412 620 822
 Governor
 Governor design. : RQV350...1050PA842-6
 Governor no. : 0 421 813 853

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 390.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del. quantity cm³/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...5.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.10

2nd speed rpm : 700

travel mm : 4.00...4.40

3rd speed rpm : 1100

travel mm : 6.80...7.20

4th speed rpm : 1200

travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 660
Del.quantity : 199.0...201.0
1000 : (196.0...204.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 59...67

Testing:
1st rack travel in: 11.30
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 100
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 400...600

TORQUE CONTROL
Dimension a mm : 1.30
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.40
2nd speed rpm : 975
Rack travel in m: 12.60...12.80
3rd speed rpm : 875
Rack travel in m: 13.20...13.40
4th speed rpm : 700
Rack travel in m: 13.50...13.70

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 660
Rack travel mm : 13.50...13.70

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.30...11.50
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 830
Rack travel in m: 13.70...13.80
4th pressure hPa : 1150
Rack travel in m: 13.70...13.90
5th pressure hPa : -
Rack travel in m: 10.40...10.60

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 170.0...174.0
1000 s: (167.0...177.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 750
Del.quantity cm³/ : 204.0...208.0
1000 s: (201.0...211.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 150.0...154.0
1000 s: (147.0...157.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 136.0...138.0
1000 s: (133.0...141.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 e
 Edition : 17.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 640 820
 Injection pump
 Pump designation : PE12P120A320LS7814-2
 EP type number : 0 412 620 824
 Governor
 Governor design. : RQ750PA966
 Governor no. : 0 421 801 535

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 535.0
 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.90...15.00

Del.quantity cm³/ : 31.6...31.8

100 s: (31.3...32.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.6...5.2

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 316.0...318.0

1000 : (313.0...321.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 13.90

Speed rpm : 755...760

2nd rack travel in: 4.00

Speed rpm : 780...790

Speed rpm : 0.00...1.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.90
Speed rpm : 755...760

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11, Du11
 Edition : 16.02.90
 Replaces : 9.3.87
 Test oil : ISO-4113

Combination no. : 0 402 646 819

Injection pump
 Pump designation : PE6P120A72ORS7001
 EP type number : 0 412 626 800
 Governor
 Governor design. : RQ200/1100PA713
 Governor no. : 0 421 801 262

Customer spec. information
 Customer : SCANIA

Engine : DS11 25,26

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 11.70...11.80

Del.quantity cm³/ : 16.1...16.3

100 s: (15.8...16.6)

Spread cm³ : 0.5

100 s: (0.8)

2nd speed rpm : 225.0

Rack travel in mm : 4.6...5.2

Del.quantity cm³/ : 1.3...1.7

100 s: (-)

Spread cm³ : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 161.0...163.0

1000 : (158.0...166.0)

Spread cm³ : 5.00

1000 : (8.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 10.70

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1290...1320

4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.5

Testing:

Speed rpm : 100
Minimum rack travel: 5.90
Speed rpm : 225
Rack travel in mm : 4.40...4.60
Rack travel in mm : 2.00
Speed rpm : 300...340

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.70...11.80

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 220
Rack travel in m: 11.40...11.50
3rd pressure hPa : 190
Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 163.0...171.0
1000 s: (161.0...173.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 120.0...124.0
1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.40...4.60

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over
on May 17, 1984

Start of delivery - engine:
DS11 25 - 15° before TDC
DS11 26 - 11° before TDC

Firing sequence of engine:
1-5-3-6-2-4.

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 h
Edition : 16.02.90
Replaces : 9.3.87
Test oil : ISO-4113

Combination no. : 0 402 646 824

Injection pump
Pump designation : PE6P120A320RS7111
EP type number : 0 412 626 809
Governor
Governor design. : RQ750PA758
Governor no. : 0 421 801 297

Customer-spec. information
Customer : SAAB-SCANIA

Engine : DS 9 46,47

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 17.7...17.9

100 s: (17.4...18.2)

Spread cm³ : 0.6

100 s: (0.9)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 177.0...179.0

1000 : (174.0...182.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.30

Speed rpm : 750...755

2nd rack travel in: 4.00

Speed rpm : 784...797

4th rack travel in: 850

Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version
Rack travel in mm : 5.80...6.00
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
1987-01-08

Start-of-delivery mark is at 15°
angular displacement of the cam after
start of delivery at cylinder 1 with
control-rod travel 9.00...12.00 mm

Firing sequence of engine:
1-5-3-6-2-4.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 16,0 a
 Edition : 16.02.90
 Replaces : 10.2.89
 Test oil : ISO-4113

Combination no. : 0 402 646 832

Injection pump
 Pump designation : PE6P130A72ORS7122
 EP type number : 0 412 636 804
 Governor
 Governor design. : RQV225...930PA799
 Governor no. : 0 421 813 544

Customer-spec. information
 Customer : VOLVO

Engine : TD162 FS

1st version kW : 343.0
 Rated speed : 1860

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder assembly : 1 688 901 019

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 27.4...27.7
 100 s: (27.1...28.1)

Spread cm³ : 0.6
 100 s: (1.0)

2nd speed rpm : 250.0
 Rack travel in mm : 5.0...5.2
 Del. quantity cm³/ : 2.5...3.0
 100 s: (2.3...3.3)

Spread cm³ : 0.5
 100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.10...2.70

3rd speed rpm : 700
 travel mm : 6.40...6.60

4th speed rpm : 960
 travel mm : 7.60...7.80

5th speed rpm : 1045
 travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1010
 Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 700

Del.quantity : 274.5...277.5
1000 : (271.0...281.0)
Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:

1st rack travel in: 11.90
Speed rpm : 960...972
2nd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 61...69

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 225...400

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 12.90...13.00

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.80
2nd pressure hPa : 80
Rack travel in m: 10.00...10.10
3rd pressure hPa : 540
Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm3/ : 182.5...185.5
1000 s: (179.0...189.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 960...972

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...145.0
1000 s: (-)
Rack travel in mm : 9.70...9.80

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/ : 25.5...30.5
1000 s: (23.0...33.0)
Spread cm3 : 5.00
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t
 Edition : 16.02.90
 Replaces : 5.8.88
 Test oil : ISO-4113
 Combination no. : 0 402 646 838
 Injection pump
 Pump designation : PE6P120A320LS7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQ300/1050PA762-4
 Governor no. : 0 421 801 390

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 240.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-le /er position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.70...14.90
3rd speed rpm : 800
Rack travel in m: 15.10...15.30

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.70
5th pressure hPa : -
Rack travel in m: 9.50...9.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1350
Speed rpm : 1050
Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm3/ : 243.0...247.0
1000 s: (240.0...250.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 2
 Edition : 30.03.90
 Replaces : 25.3.88
 Test oil : ISO-4113
 Combination no. : 0 402 646 843
 Injection pump
 Pump designation : PE6P120A320LS7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQV300...1050PA797-2
 Governor no. : 0 421 813 614

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 240.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 21.1...21.3

100 s: (20.8...21.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1075

travel mm : 7.40...7.60

4th speed rpm : 1100

travel mm : 8.00...8.40

5th speed rpm : 1150

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 211.0...213.0
1000 : (208.0...216.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 13.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 81...89

Testing:
Speed rpm : 200
Minimum rack trave: 7.90
Speed rpm : 300
Rack travel in mm : 5.70...6.00

CONSTANT REGULATION
Speed rpm : 300...450

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 1050
Rack travel in m: 14.80...15.00
3rd speed rpm : 800
Rack travel in m: 15.00...15.20
4th speed rpm : 700

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.90...14.10

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.70...10.90
2nd pressure hPa : 550
Rack travel in m: 12.80...13.10

3rd pressure hPa : 1050
Rack travel in m: 14.00...14.10 *
4th pressure hPa : 1150
Rack travel in m: 14.40...14.60
5th pressure hPa : -
Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1450
Speed rpm : 1050
Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm³ : 8.00
1000 s: (12.)
Aneroid pressure h: 1450
Speed rpm : 800
Del.quantity cm³/ : 242.0...246.0
1000 s: (239.0...249.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 133.0...135.0
1000 s: (130.0...138.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 200.0...220.0
1000 s: (196.0...224.0)
Rack travel in mm : 200.00...220.00

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 d
 Edition : 12.01.90
 Replaces : 10.2.89
 Test oil : ISO-4113
 Combination no. : 0 402 646 844
 Injection pump
 Pump designation : PE6P120A72ORS7017
 EP type number : 0 412 626 818
 Governor
 Governor design. : RQV200...1000PA539-7
 Governer no. : 0 421 813 631

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC 11 12

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.50...14.60
 Del.quantity cm³/ : 22.0...22.2
 100 s: (21.7...22.5)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 5.3...5.7
 Del.quantity cm³/ : 1.8...2.2
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.40...3.00
 3rd speed rpm : 650
 travel mm : 4.50...5.10
 4th speed rpm : 1045
 travel mm : 8.40...8.60
 5th speed rpm : 1165
 travel mm : 10.00...10.40

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 220.0...222.0
 1000 : (217.0...225.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 13.50
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 225
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.50...14.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.70
2nd pressure hPa : 480
Rack travel in m: 14.10...14.20
3rd pressure hPa : 285
Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 210.0...218.0
1000 s: (208.0...220.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 169.0...173.0
1000 s: (167.0...175.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.50
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.30...5.50

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-21

Start of delivery - engine: 16° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 c
 Edition : 12.02.90
 Replaces : 10.2.89
 Test oil : ISO-4113
 Combination no. : 0 402 646 845
 Injection pump
 Pump designation : PE6P120A720RS7139
 EP type number : 0 412 626 819
 Governor
 Governor design. : RQV200...1000PA725-2
 Govenor no. : 0 421 813 632

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC11 13

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 15.20...15.30
 Del.quantity cm³/ : 23.6...23.8
 100 s: (23.3...24.1)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 225.0
 Rack travel in mm : 5.3...5.7
 Del.quantity cm³/ : 1.8...2.2
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.40...3.00
 3rd speed rpm : 650
 travel mm : 4.40...5.00
 4th speed rpm : 1045
 travel mm : 8.40...8.60
 5th speed rpm : 1170
 travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 236.0...238.0
 1000 : (233.0...241.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 14.20
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 100
Minimum rack travel: 6.90
Speed rpm : 225
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00
Speed rpm : 380...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 15.20...15.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 12.30...12.70
2nd pressure hPa : 535
Rack travel in m: 14.60...14.70
3rd pressure hPa : 290
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 226.0...234.0
1000 s: (224.0...236.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 169.0...173.0
1000 s: (167.0...175.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.30...5.50

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-21

Start of delivery - engine: 15° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 L
 Edition : 12.01.90
 Replaces : 10.2.89
 Test oil : ISO-4113

Combination no. : 0 402 646 847

Injection pump
 Pump designation : PE6P120A320RS7138
 EP type number : 0 412 626 822
 Governor
 Governor design. : RQV200...1100PA712-2
 Governor no. : 0 421 813 636

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC9 02

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 18.4...18.6

100 s: (18.1...18.9)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 4.9...5.3
 Del.quantity cm³/ : 2.1...2.5
 100 s: (-)

Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.90...1.30

2nd speed rpm : 350
 travel mm : 2.50...3.10

3rd speed rpm : 650
 travel mm : 5.40...6.00

4th speed rpm : 1145
 travel mm : 8.90...9.10

5th speed rpm : 1290
 travel mm : 10.20...10.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1120
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 184.0...186.0
 1000 : (181.0...189.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 11.90
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1290...1320
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.90...11.30
2nd pressure hPa : 345
Rack travel in m: 12.40...12.50
3rd pressure hPa : 175
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 179.0...187.0
1000 s: (177.0...189.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 132.0...136.0
1000 s: (130.0...138.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...320.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Firing sequence of engine:
1-5-3-6-2-4.

Start of delivery - engine: 15° before
TDC

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 L 1
 Edition : 12.02.90
 Replaces : 10.2.89
 Test oil : ISO-4113
 Combination no. : 0 402 646 848
 Injection pump
 Pump designation : PE6P120A32ORS7138
 EP type number : 0 412 626 822
 Governor
 Governor design. : RQV200...1100PA712-3
 Govenner no. : 0 421 813 637

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS9 05

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...5.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 4.9...5.3

Del.quantity cm³/ : 2.1...2.5

100 s: (-)

Spread cm³ : 0.3

100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.90...1.30

2nd speed rpm : 350
 travel mm : 2.50...3.10

3rd speed rpm : 650
 travel mm : 5.40...6.00

4th speed rpm : 1145
 travel mm : 8.90...9.10

5th speed rpm : 1280
 travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (162.0...170.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 11.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1265...1295
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 300...360

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.20...12.30

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...11.00
2nd pressure hPa : 360
Rack travel in m: 11.80...11.90
3rd pressure hPa : 240
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm³/ : 160.0...168.0
1000 s: (158.0...170.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 125.0...129.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...320.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1988-09-21

Start of delivery - engine: 13° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 m
 Edition : 12.02.90
 Replaces : 17.2.89
 Test oil : ISO-4113

Combination no. : 0 402 646 853

Injection pump
 Pump designation : PE6P120A320RS7138
 EP type number : 0 412 626 822
 Governor
 Governor design. : RQ200/1100PA873
 Governor no. : 0 421 801 415

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS9 05

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...5.55)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 16.5...16.7

100 s: (16.2...17.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 225.0

Rack travel in mm : 5.1...5.7

Del.quantity cm³/ : 2.1...2.5

100 s: (-)

Spread cm³ : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 165.0...167.0

1000 : (162.0...170.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.20

Speed rpm : 1145...1160

2nd rack travel in: 4.00

Speed rpm : 1300...1330

4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 5.0

Testing:

Speed rpm : 100
Minimum rack travel: 6.40
Speed rpm : 225
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 320...360

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.20...12.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.60...11.00
2nd pressure hPa : 360
Rack travel in m: 11.80...11.90
3rd pressure hPa : 240
Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1100
Del.quantity cm3/ : 163.0...171.0
1000 s: (161.0...173.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 125.0...129.0
1000 s: (123.0...131.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 270.0...320.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 9,0 l 2
 Edition : 12.02.90
 Replaces : 2.6.89
 Test oil : ISO-4113
 Combination no. : 0 402 646 860
 Injection pump
 Pump designation : PE6P120A320RS7138
 EP type number : 0 412 626 822
 Governor
 Governor design. : RQV350...1100PA795-1
 Governor no. : 0 421 813 693

Customer-spec. information
 Customer : SAAB-SCANIA
 Engine : DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.20...12.30
 Del.quantity cm³/ : 16.5...16.7
 100 s: (16.2...17.0)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 4.7...5.3
 Del.quantity cm³/ : 2.0...2.4
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.70
 2nd speed rpm : 650
 travel mm : 4.10...4.70
 3rd speed rpm : 1145
 travel mm : 7.80...8.00
 4th speed rpm : 1255
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1230
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 165.0...167.0
 1000 : (162.0...170.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 99...107

Testing:
1st rack travel in: 11.20
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 68...76

Testing:
Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 350
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1100
Del.quantity cm³/ : 163.0...171.0
1000 s: (161.0...173.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 270.0...320.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.

D09

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over
on Oct. 17, 1988

Start of delivery - engine: 13° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 j
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 864
 Injection pump
 Pump designation : PE6P120A720RS70200
 EP type number : 0 412 626 831
 Governor
 Governor design. : RQ200/1000PA713-7
 Governor no. : 0 421 801 484

Customer-spec. information
 Customer : SCANIA

Engine : DSC11 17

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.80...12.90
 Del.quantity cm³/ : 20.1...20.3
 100 s: (19.8...20.6)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 225.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.00...1.40
 2nd speed rpm : 350
 travel mm : 2.70...3.30
 3rd speed rpm : 650
 travel mm : 3.70...4.30
 4th speed rpm : 1060
 travel mm : 4.20...4.40
 5th speed rpm : 1205
 travel mm : 6.10...6.50

GUIDE SLEEVE POSITION

Control-lever position
 Degree: 100
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 201.0...203.0
 1000 : (198.0...206.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.80
Speed rpm : 1045...1060
2nd rack travel in: 4.00
Speed rpm : 1185...1215
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225
Rack travel in mm : 4.6

Testing:

Speed rpm : 100
Minimum rack travel: 6.10
Speed rpm : 225
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 300...340

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 440
Rack travel in m: 12.50...12.60
3rd pressure hPa : 250
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 193.0...201.0
1000 s: (191.0...203.0)

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.50...4.70

Remarks:

:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 17° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 i1
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 865
 Injection pump
 Pump designation : PE6P120A72ORS7020
 EP type number : 0 412 626 828
 Governor
 Governor design. : RQV200...1000PA539-8
 Governor no. : 0 421 813 635

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS11 34

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.90...13.00
 Del. quantity cm³/ : 20.8...21.0
 100 s : (20.5...21.3)
 Spread cm³ : 0.6
 100 s : (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 4.6...5.0
 Del. quantity cm³/ : 1.8...2.2
 100 s : (-)
 Spread cm³ : 0.3
 100 s : (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.40...3.00
 3rd speed rpm : 650
 travel mm : 4.50...5.10
 4th speed rpm : 1045
 travel mm : 8.40...8.60
 5th speed rpm : 1150
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del. quantity : 208.0...210.0
 1000 : (205.0...213.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 11.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 520
Rack travel in m: 12.30...12.40
3rd pressure hPa : 320
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 198.0...206.0
1000 s: (196.0...208.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 13° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 j1
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 868
 Injection pump
 Pump designation : PE6P12DA72ORS7020
 EP type number : 0 412 626 828
 Governor
 Governor design. : RQ200/1000PA713-5
 Governor no. : 0 421 801 444

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS11 34

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.90...13.00
 Del.quantity cm³/ : 20.8...21.0
 100 s: (20.5...21.3)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 225.0
 Rack travel in mm : 4.6...5.0
 Del.quantity cm³/ : 1.8...2.2
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 208.0...210.0
 1000 : (205.0...213.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.5

Testing:
 1st rack travel in: 11.90
 Speed rpm : 1045...1060
 2nd rack travel in: 4.00
 Speed rpm : 1185...1215

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.7

Testing:
Speed rpm : 100
Minimum rack trave: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 305...345

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 520
Rack travel in m: 12.30...12.40
3rd pressure hPa : 320
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 198.0...206.0
1000 s: (196.0...208.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 13° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 n
 Edition : 12.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 870
 Injection pump
 Pump designation : PE6P120A720RS7170
 EP type number : 0 412 626 829
 Governor
 Governor design. : RQ750PA758-3
 Governor no. : 0 421 801 467

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test Lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.50...12.60
 Del.quantity cm³/ : 24.9...25.1
 100 s: (24.6...25.4)
 Spread cm³ : 0.6
 100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 249.0...251.0
 1000 : (246.0...254.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 11.50
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 784...797
 4th rack travel in: 850
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 11.50
 Speed rpm : 750...755

HIGH IDLE

1st version
 Rack travel in mm : 5.80...6.00
 Spread cm³ : 4.00
 1000 s: (7.00)

Remarks:

:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Generator

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 m
 Edition : 05.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 872
 Injection pump
 Pump designation : PE6P120A72ORS7126Z
 EP type number : 0 412 626 830
 Governor
 Governor design. : RQV200...1000PA725-6
 Governor no. : 0 421 813 755

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DSC11 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.80...12.90
 Del.quantity cm³/ : 20.4...20.6
 100 s: (20.1...20.9)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 225.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm³/ : 1.8...2.2
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.40...3.00
 3rd speed rpm : 650
 travel mm : 4.40...5.00
 4th speed rpm : 1045
 travel mm : 8.40...8.60
 5th speed rpm : 1150
 travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1170
 Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 204.0...206.0
 1000 : (201.0...209.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 11.80
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 225
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 350...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 405
Rack travel in m: 12.30...12.40
3rd pressure hPa : 320
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 197.0...205.0
1000 s: (195.0...207.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.80
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...155.0
1000 s: (-)
Rack travel in mm : 10.30...10.70

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 9° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 L1
 Edition : 12.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 873
 Injection pump
 Pump designation : PE6P120A72ORS7126
 EP type number : 0 412 626 815
 Governor
 Governor design. : RQV350...1050PA795-3
 Governor no. : 0 421 813 736

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

D20

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.10...14.20
 Del.quantity cm³/ : 23.4...23.6
 100 s: (23.1...23.9)
 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.3...4.7
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.20...1.60
 2nd speed rpm : 650
 travel mm : 4.10...4.70
 3rd speed rpm : 1095
 travel mm : 7.30...7.50
 4th speed rpm : 1240
 travel mm : 8.60...9.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1230
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 13.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 4.30...4.50
Rack travel in mm : 2.00
Speed rpm : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1000
Del.quantity cm³/ : 223.0...231.0
1000 s: (221.0...233.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.30...4.50

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 o
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 875
 Injection pump
 Pump designation : PE6P120A720RS7126Z
 EP type number : 0 412 626 830
 Governor
 Governor design. : RQ200/1000PA745-1
 Governor no. : 0 421 801 472

Customer-spec. information
 Customer : SCANIA

Engine : DSC 11 08

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.80...12.90
 Del.quantity cm³/ : 20.4...20.6
 100 s: (20.1...20.9)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 225.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm³/ : 1.8...2.2
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 600
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 204.0...206.0
 1000 : (201.0...209.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600
 Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.80
 Speed rpm : 1045...1060
 2nd rack travel in: 4.00
 Speed rpm : 1180...1210

4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 225
Rack travel in mm : 4.8

Testing:

Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 225
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 310...350

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.80...12.90

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 470
Rack travel in m: 12.30...12.40
3rd pressure hPa : 320
Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 197.0...205.0
1000 s: (195.0...207.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1045...1060

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 9° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 i4
 Edition : 16.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 878
 Injection pump
 Pump designation : PE6P120A720RS7020
 EP type number : 0 412 626 828
 Governor
 Governor design. : RQV200...1000PA539-1
 1
 Governor no. : 0 421 813 813

Customer-spec. information
 Customer : SCANIA

Engine : DS11 34

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.90...13.00
 Del.quantity cm³/ : 20.8...21.0
 100 s: (20.5...21.3)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 225.0
 Rack travel in mm : 4.6...5.0
 Del.quantity cm³/ : 1.8...2.2
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 1.20...1.60
 2nd speed rpm : 350
 travel mm : 2.40...3.00
 3rd speed rpm : 650
 travel mm : 4.50...5.10
 4th speed rpm : 1045
 travel mm : 8.40...8.60
 5th speed rpm : 1150
 travel mm : 9.80...10.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1050
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 208.0...210.0
 1000 : (205.0...213.0)

Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 11.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1135...1165
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.20
Speed rpm : 225
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 340...400

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.90...13.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 520
Rack travel in m: 12.30...12.40
3rd pressure hPa : 320
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 198.0...206.0
1000 s: (196.0...208.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 16,0 c
 Edition : 16.02.90
 Replaces : 15.8.89
 Test oil : ISO-4113

Combination no. : 0 402 646 883

Injection pump
 Pump designation : PE6P130A72ORS7122-2
 EP type number : 0 412 636 813
 Governor
 Governor design. : RQV225...930PA922
 Governor no. : 0 421 813 763

Customer-spec. information
 Customer : VOLVO-TRUCK

Engine : TD162 FL,
 1st version kW : 357.0
 Rated speed : 1860

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.30...13.40

Del.quantity cm³/ : 28.8...29.1

100 s: (28.5...29.5)

Spread cm³ : 0.6

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm : 5.0...5.2

Del.quantity cm³/ : 2.5...3.0

100 s: (2.3...3.3)

Spread cm³ : 0.5

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 1.00...1.40

2nd speed rpm : 350
 travel mm : 2.10...2.70

3rd speed rpm : 700
 travel mm : 5.60...6.20

4th speed rpm : 975
 travel mm : 8.20...8.40

5th speed rpm : 1090
 travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1100
 Rack travel in mm : 7.70...10.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 700

Del.quantity : 288.5...291.5
1000 : (285.0...295.0)
Spread cm³ : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 12.30
Speed rpm : 970...980
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

Speed rpm : 225...450

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 500
Pressure hPa : 700
Rack travel mm : 13.30...13.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.90
2nd pressure hPa : 80
Rack travel in m: 10.00...10.10
3rd pressure hPa : 610
Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 700
Del.quantity cm³/ : 182.0...185.0
1000 s: (178.5...188.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.30
Speed rpm : 970...980

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 125.0...145.0
1000 s: (121.0...149.0)
Rack travel in mm : 9.70...9.90

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm³/ : 25.5...30.5
1000 s: (23.0...33.0)
Spread cm³ : 5.00
1000 s: (8.00)

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 L
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 885
 Injection pump
 Pump designation : PE6P120A72ORS7126
 EP type number : 0 412 626 815
 Governor
 Governor design. : RQV350...1050PA795-9
 Governor no. : 0 421 813 769

Customer-spec. information
 Customer : SCANIA

Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 14.10...14.20
 Del.quantity cm³/ : 23.4...23.6
 100 s: (23.1...23.9)
 Spread cm³ : 0.6
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 4.3...4.7
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.20...1.60
 2nd speed rpm : 650
 travel mm : 4.10...4.70
 3rd speed rpm : 1095
 travel mm : 7.30...7.50
 4th speed rpm : 1240
 travel mm : 8.60...9.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1230
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 13.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1225...1255
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 100
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 4.30...4.50
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 510
Rack travel in m: 13.00...13.10
3rd pressure hPa : 250
Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 223.0...231.0
1000 s: (221.0...233.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 16° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 n1
 Edition : 23.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 886
 Injection pump
 Pump designation : PE6P120A72ORS7170
 EP type number : 0 412 626 829
 Governor
 Governor design. : RQ750PA758-8
 Governor no. : 0 421 801 491

Customer-spec. information
 Customer : SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 12.50...12.60
 Del.quantity cm³/ : 24.9...25.1
 100 s: (24.6...25.4)
 Spread cm³ : 0.7
 100 s: (1.0)

2nd speed rpm : 500.0
 Rack travel in mm : 9.7...10.1
 Del.quantity cm³/ : 15.0...15.4
 100 s: (14.8...15.6)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 249.0...251.0
 1000 : (246.0...254.0)
 Spread cm³ : 7.00
 1000 : (10.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 11.50
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 784...797
 4th rack travel in: 850
 Speed rpm : 0.00...1.00

Aneroid/Altitude
 Compensator Test

1st version
 Setting
 Speed rpm : 500
 Pressure hPa : 900
 Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...10.10
2nd pressure hPa : 575
Rack travel in m: 12.00...12.10
3rd pressure hPa : 370
Rack travel in m: 10.70...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 90.0...130.0
1000 s: (-)
Rack travel in mm : 9.70...10.10

HIGH IDLE

1st version
Aneroid pressure h: 900
Rack travel in mm : 5.80...6.00
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:
:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1990-01-11

E03

Start of delivery - engine: 16° before TDC

Firing sequence of engine:
1-5-3-6-2-4.

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 j
 Edition : 06.04.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 893
 Injection pump
 Pump designation : PE6P120A32ORS7202
 EP type number : 0 412 626 835
 Governor
 Governor design. : RQ250/1000PA936
 Governor no. : 0 421 801 507

Customer-spec. information
 Customer : DAF

Engine : WS 268
 1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 11.90...12.00
 Del. quantity cm³/ : 21.7...21.9
 100 s : (21.4...22.2)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.9...5.3
 Del. quantity cm³/ : 2.3...2.9
 100 s : (2.0...3.2)
 Spread cm³ : 0.8
 100 s : (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000
 Del. quantity : 217.0...219.0
 1000 : (214.0...222.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 550
 Rack travel in mm : 15.8

Testing:
 1st rack travel in: 10.90

Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.1

Testing:

Speed rpm : 100
Minimum rack travel: 6.60
Speed rpm : 250
Rack travel in mm : 5.00...5.20
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.10...12.20
2nd speed rpm : 1000
Rack travel in m: 12.00...12.20

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 360
Rack travel in m: 11.10...11.20
3rd pressure hPa : 220
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 153.0...155.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

E05

1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 23.0...29.0
1000 s: (20.0...32.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k1
 Edition : 12.04.90
 Replaces : 5.1.90
 Test oil : ISO-4113
 Combination no. : 0 402 646 894
 Injection pump
 Pump designation : PE6P120A320RS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQ250/1000PA936-1
 Governor no. : 0 421 801 508

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00x2.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0

1000 : (242.0...250.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 550

Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.70

Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.7

Testing:

Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80
Rack travel in mm : 2.00
Speed rpm : 345...385

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 14.00...14.10
2nd speed rpm : 1000
Rack travel in m: 13.90...14.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version

E07

1mm rack travel less than

full load rack tr: 12.70
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 j2
 Edition : 06.07.90
 Replaces : 12.1.90
 Test oil : ISO-4113
 Combination no. : 0 402 646 895
 Injection pump
 Pump designation : PE6P120A32ORS7202
 EP type number : 0 412 626 835
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information

Customer : DAF
 Engine : WS 268

1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 11.90...12.00
 Del.quantity cm³/ : 20.8...21.0
 100 s: (20.5...21.3)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 250.0
 Rack travel in mm : 4.9...5.3
 Del.quantity cm³/ : 2.1...2.7
 100 s: (1.8...3.0)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10
 2nd speed rpm : 400
 travel mm : 2.40...3.20
 3rd speed rpm : 800
 travel mm : 5.20...5.60
 4th speed rpm : 1000
 travel mm : 7.30...7.50
 5th speed rpm : 1300
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1060
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000

Del.quantity : 208.5...210.5
1000 : (205.5...213.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 10.90
Speed rpm : 1030...1040
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1300
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 74...82

Testing:
Speed rpm : 100
Minimum rack trave: 6.60
Speed rpm : 250
Rack travel in mm : 5.00...5.20

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 11.90...12.00

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 360
Rack travel in m: 11.10...11.20
3rd pressure hPa : 220
Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 145.5...147.5
1000 s: (142.5...150.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.90
Speed rpm : 1030...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.30
Del.quantity cm³/ : 21.0...27.0
1000 s: (18.0...30.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k4
 Edition : 17.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 896
 Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQV250...1000PA939
 Governor no. : 0 421 813 829

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.25)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10

2nd speed rpm : 400
 travel mm : 2.40...3.20

3rd speed rpm : 800
 travel mm : 5.20...5.60

4th speed rpm : 1000
 travel mm : 7.30...7.50

5th speed rpm : 1300
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0
1000 : (242.0...250.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 12.70
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 275...385

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

E11

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1025...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k5
 Edition : 16.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 896
 Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQV250...1000PA939-1
 Governor no. : 0 421 813 830

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.25)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 24.5...24.7

100 s: (24.2...25.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del. quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250
 travel mm : 0.70...1.10

2nd speed rpm : 400
 travel mm : 2.40...3.20

3rd speed rpm : 800
 travel mm : 5.20...5.60

4th speed rpm : 1000
 travel mm : 7.30...7.50

5th speed rpm : 1300
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0
1000 : (242.0...250.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 12.70
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 275...385

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

E13

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1025...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 k3
 Edition : 02.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 896
 Injection pump
 Pump designation : PE6P120A32ORS7194
 EP type number : 0 412 626 834
 Governor
 Governor design. : RQV275...1000PA939-1
 Governor no. : 0 421 813 830

Customer-spec. information
 Customer : DAF

Engine : WS 295

1st version kW : 295.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.25)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 13.70...13.80

Del. quantity cm³/ : 24.5...24.7

100 s : (24.2...25.0)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 7.6...8.0

Del. quantity cm³/ : 1.4...2.0

100 s : (1.1...2.3)

Spread cm³ : 0.8

100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 0.70...1.10

2nd speed rpm : 400

travel mm : 2.40...3.20

3rd speed rpm : 800

travel mm : 5.20...5.60

4th speed rpm : 1000

travel mm : 7.30...7.50

5th speed rpm : 1300

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0
1000 : (242.0...250.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 12.70
Speed rpm : 1025...1040
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 78...86

Testing:
Speed rpm : 100
Minimum rack travel: 8.20
Speed rpm : 250
Rack travel in mm : 6.60...6.80

CONSTANT REGULATION
Speed rpm : 275...385

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 13.70...13.80

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 11.00...11.20
2nd pressure hPa : 460
Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

START CUT-OUT

Speed 1/min : 200 (220)

FUEL DELIVERY CHARACTERISTICS

1st version

E15

Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 171.0...173.0
1000 s: (168.0...176.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.70
Speed rpm : 1025...1040

LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.60...6.80

Remarks:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 5
Edition : 23.03.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 901
Injection pump
Pump designation : PE6P120A320LS7808
EP type number : 0 412 626 816
Governor
Governor design. : RQV300..950PA797-12
Governor no. : 0 421 813 840

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kw : 249.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/ : 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.7...6.0

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
travel mm : 1.10...1.40

2nd speed rpm : 620
travel mm : 5.00...5.40

3rd speed rpm : 780
travel mm : 6.00...6.50

4th speed rpm : 1010
travel mm : 8.30...8.80

5th speed rpm : 1100
travel mm : 9.80...10.30

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 207.0...209.0
1000 : (204.0...212.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Rack travel in m: 14.60...14.80
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.60...10.80
2nd pressure hPa : 550
Rack travel in m: 12.70...13.00
3rd pressure hPa : 1150
Rack travel in m: 13.80...14.00
4th pressure hPa : 1250
Rack travel in m: 14.30...14.50

5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1350
Speed rpm : 950
Del.quantity cm³/ : 238.0...240.0
1000 s: (235.0...243.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm³/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 13,8 w
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 902
 Injection pump
 Pump designation : PE6P130A72ORS7197
 EP type number : 0 412 636 815
 Governor
 Governor design. : RQV300...900PA946
 Governor no. : 0 421 813 845

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8210.42.151

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 105
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900
 Rack travel in mm : 13.50...13.60
 Del.quantity cm³/ : 25.5...25.8
 100 s: (25.1...26.1)
 Spread cm³ : 0.6
 100 s: (1.0)

2nd speed rpm : 300.0
 Rack travel in mm : 5.1...5.5
 Del.quantity cm³/ : 1.9...2.5
 100 s: (1.5...2.9)
 Spread cm³ : 1.0
 100 s: (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.00...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.40
 3rd speed rpm : 700
 travel mm : 5.50...5.90
 4th speed rpm : 900
 travel mm : 7.70...7.90
 5th speed rpm : 1200
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 935
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 900
 Del.quantity : 255.0...258.0
 1000 : (251.5...261.5)

Spread cm3 : 6.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 12.50
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 76...84

Testing:
Speed rpm : 100
Minimum rack travel: 6.80
Speed rpm : 300
Rack travel in mm : 5.20...5.40

CONSTANT REGULATION
Speed rpm : 320...440

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.40...13.50

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.70
2nd pressure hPa : 345
Rack travel in m: 12.70...12.80
3rd pressure hPa : 275
Rack travel in m: 11.10...11.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 181.0...184.0
1000 s: (177.5...187.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 940...950

INTERMEDIATE RATED SPEED
Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.10...5.50
Del.quantity cm3/ : 19.0...25.0
1000 s: (15.0...29.0)
Spread cm3 : 10.00
1000 s: (14.00)

Remarks:

:
Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 b2
Edition : 30.03.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 905
Injection pump
Pump designation : PE6P120A72ORS7126
EP type number : 0 412 626 815
Governor
Governor design. : RQV200...1000PA725-6
Governor no. : 0 421 813 755

Customer-spec. information
Customer : SCANIA

Engine : DSC11 10

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 015
Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.90...14.00
Del.quantity cm3/ : 23.2...23.4
100 s: (22.9...23.7)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 225.0
Rack travel in mm : 4.7...5.1
Del.quantity cm3/ : 1.8...2.2
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
travel mm : 1.20...1.60
2nd speed rpm : 350
travel mm : 2.40...3.00
3rd speed rpm : 650
travel mm : 4.40...5.00
4th speed rpm : 1045
travel mm : 8.40...8.60
5th speed rpm : 1150
travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1170
Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 232.0...234.0
1000 : (229.0...237.0)

Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 12.90
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 61...69

Testing:
Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 225
Rack travel in mm : 4.70...4.90
Rack travel in mm : 2.00
Speed rpm : 350...410

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.90...14.00

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.30...10.70
2nd pressure hPa : 555
Rack travel in m: 12.90...13.00
3rd pressure hPa : 320
Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm3/ : 219.0...227.0
1000 s: (217.0...229.0)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm3/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1040...1050

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...155.0
1000 s: (-)
Rack travel in mm : 10.30...10.70

LOW IDLE

Speed rpm : 225
Rack travel in mm : 4.70...4.90

Remarks:
Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 y
 Edition : 19.06.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 906
 Injection pump
 Pump designation : PE6P120A320LS7832
 EP type number : 0 412 626 836
 Governor
 Governor design. : RQ300/1050PA952
 Governor no. : 0 421 801 521

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM401 LA

1st version kW : 228.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60
 : (5.45...5.65)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

 Rack travel in mm : 14.80...15.00

 Del.quantity cm³/ : 22.0...22.2
 100 s: (21.7...22.5)

 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.4...7.0
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-le /er position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 220.0...222.0
 1000 : (217.0...225.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 390...430

TORQUE CONTROL

Dimension a mm : 0.35
2nd speed rpm : 1050
Rack travel in m: 14.70...14.90
3rd speed rpm : 800
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.80...15.00

Measurement

Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 11.20...11.40
2nd pressure hPa : 550
Rack travel in m: 13.50...13.70
3rd pressure hPa : 1400
Rack travel in m: 14.90...15.00 *
4th pressure hPa : -
Rack travel in m: 9.70...10.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

Speed rpm : 1050
Del.quantity cm3/ : 221.0...224.0
1000 s: (218.0...227.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 235.0...239.0
1000 s: (232.0...242.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 129.0...131.0
1000 s: (126.0...134.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,0 t 6
 Edition : 19.06.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 907
 Injection pump
 Pump designation : PE6P120A32OLS7808-2
 EP type number : 0 412 626 833
 Governor
 Governor design. : RQV350..950PA870-8
 Governor no. : 0 421 813 861

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 242.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.80...14.00

Del.quantity cm³/ : 21.4...21.6

100 s: (21.1...21.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.2...5.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.30...1.70

2nd speed rpm : 425
 travel mm : 2.20...2.70

3rd speed rpm : 700
 travel mm : 4.10...4.60

4th speed rpm : 1010
 travel mm : 7.80...8.30

5th speed rpm : 1200
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 800
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 13.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1085...1115
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 58...66

Testing:
Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 350
Rack travel in mm : 5.20...5.50

CONSTANT REGULATION
Speed rpm : 350...500

TORQUE CONTROL
Dimension a mm : -
2nd speed rpm : 950
Rack travel in m: 14.90...15.10
3rd speed rpm : 800
Rack travel in m: 14.90...15.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 13.80...14.00

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 10.60...10.80
2nd pressure hPa : 550
Rack travel in m: 12.90...13.10
3rd pressure hPa : 1050

Rack travel in m: 14.10...14.30
4th pressure hPa : 1150
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 9.20...9.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1350
Speed rpm : 950
Del.quantity cm³/ : 245.0...247.0
1000 s: (242.0...250.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm³/ : 244.0...248.0
1000 s: (241.0...251.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11.0 t 7
 Edition : 06.04.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 646 908

Injection pump
 Pump designation : PE6P120A320LS7808
 EP type number : 0 412 626 816
 Governor
 Governor design. : RQ300/950PA932-3
 Governor no. : 0 421 801 528

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM441 LA

1st version kW : 249.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 6- 3- 5- 2- 4- 1

Phasing : 0-60-120-180-240-300
 -360
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.50...13.70

Del. quantity cm³/ : 20.7...20.9
 100 s: (20.4...21.2)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.7...6.0
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 900
 Del. quantity : 207.0...209.0
 1000 : (204.0...212.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.60
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.8

Testing:

Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 14.60...14.80
3rd speed rpm : 700
Rack travel in m: 14.60...14.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 10.60...10.80
2nd pressure hPa : 550
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1150
Rack travel in m: 13.80...14.00
4th pressure hPa : 1250
Rack travel in m: 14.30...14.50
5th pressure hPa : -
Rack travel in m: 8.90...9.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1350
Speed rpm : 950
Del.quantity cm3/ : 238.0...240.0
1000 s: (235.0...243.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1350
Speed rpm : 800
Del.quantity cm3/ : 236.0...239.0
1000 s: (233.0...242.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.60
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 205.0...225.0
1000 s: (201.0...229.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 646 912
 Injection pump
 Pump designation : PE6P120A32ORS7218
 EP type number : 0 412 626 839
 Governor
 Governor design. : RQ250/1000PA936-1
 Governor no. : 0 421 801 508

Customer-spec. information
 Customer : DAF

Engine : WS 268
 1st version kW : 268.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 019
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 680 750 075
 Outside diameter x wall thickness x length mm : 8.00X2.50X1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
 : (5.25...5.45)
 Rack travel in mm : 14.50...15.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
 & maximum rack tra: 14.5...15.5
 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
 Rack travel in mm : 15.00...15.10
 Del. quantity cm³/ : 23.7...23.9
 100 s: (23.4...24.2)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 250.0
 Rack travel in mm : 6.4...6.8
 Del. quantity cm³/ : 1.4...2.0
 100 s: (1.1...2.3)
 Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 550
 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1000
 Del. quantity : 237.0...239.0
 1000 : (234.0...242.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
Speed rpm : 550
Rack travel in mm : 15.8

Testing:
1st rack travel in: 14.00
Speed rpm : 1035...1050
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 5.0

Testing:
Speed rpm : 100
Minimum rack travel: 7.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL
Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 15.00...15.10
2nd speed rpm : 1000
Rack travel in m: 14.90...15.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.00...15.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 480
Rack travel in m: 14.20...14.30
3rd pressure hPa : 330
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600

Del.quantity cm³/ : 166.0...170.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : DAF 11,7 L1
Edition : 06.07.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 646 913
Injection pump
Pump designation : PE6P120A32ORS7218
EP type number : 0 412 626 839
Governor
Governor design. : RQV250...1000PA939
Governor no. : 0 421 813 829

Customer-spec. information
Customer : DAF

Engine : WS 268
1st version kW : 268.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 075
Outside diameter x Wall thickness x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40
: (5.25...5.45)
Rack travel in mm : 14.50...15.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10
& maximum rack tra: 14.5...15.5
Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850
Rack travel in mm : 15.00...15.10
Del.quantity cm3/ : 23.7...23.9
100 s: (23.4...24.2)
Spread cm3 : 0.5
100 s: (0.9)
2nd speed rpm : 250.0
Rack travel in mm : 6.4...6.8
Del.quantity cm3/ : 1.4...2.0
100 s: (1.1...2.3)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
travel mm : 7.80...8.00
2nd speed rpm : 250
travel mm : 0.70...1.10
3rd speed rpm : 400
travel mm : 2.50...3.10
4th speed rpm : 700
travel mm : 4.50...4.90
5th speed rpm : 1350
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1075
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 1000
Del.quantity : 237.0...239.0
1000 : (234.0...242.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 14.00
Speed rpm : 1040...1050
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.40

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 100
Minimum rack trave: 7.00
Speed rpm : 250
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 270...380

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 15.00...15.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 12.40...12.60
2nd pressure hPa : 480
Rack travel in m: 14.20...14.30
3rd pressure hPa : 330
Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm³/ : 166.0...170.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.00
Speed rpm : 1040...1050

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.90...5.10

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 1
 Edition : 15.03.90
 Replaces : 24.2.89
 Test oil : ISO-4113

Combination no. : 0 402 648 812

Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RQ300/1050PA717
 Governor no. : 0 421 801 258

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5- 4-
 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del. quantity cm³/ : 22.0...22.2
 100 s: (21.7...22.5)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.1...6.7
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEFVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 680
 Del. quantity : 220.0...222.0
 1000 : (217.0...225.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 850
Rack travel in m: 15.80...16.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600
1st pressure hPa : 310
Rack travel in m: 12.10...12.30
2nd pressure hPa : 470
Rack travel in m: 13.70...13.90
3rd pressure hPa : 820
Rack travel in m: 14.90...15.00
4th pressure hPa : 950
Rack travel in m: 15.60...15.90
5th pressure hPa : -
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150
Speed rpm : 1050
Del.quantity cm3/ : 229.0...232.0
1000 s: (226.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1150
Speed rpm : 850
Del.quantity cm3/ : 247.0...251.0
1000 s: (244.0...254.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 4
 Edition : 23.04.90
 Replaces : 3.11.89
 Test oil : ISO-4113

Combination no. : 0 402 648 817

Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RQ300/1050PA762-5
 Governor no. : 0 421 801 399

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 20.4...20.6

100 s: (20.1...20.9)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.3...1.9

100 s: (1.0...2.2)

Spread cm³ : 0.5

100 s: (0.8)

GUIDE SLEF/E POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 650

Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

Spread cm³ : 4.00

1000 : (7.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 12.30...12.50
2nd pressure hPa : 400
Rack travel in m: 13.30...13.60
3rd pressure hPa : 850
Rack travel in m: 14.10...14.20 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 178.0...181.0
1000 s: (175.0...184.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm3 : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm3 : 7.00
1000 s: (10.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 5
 Edition : 17.05.90
 Replaces : 3.11.89
 Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RQV300..1050PA797-3
 Governor no. : 0 421 813 627

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del. quantity cm³/ : 20.4...20.6
 100 s : (20.1...20.9)

Spread cm³ : 0.4
 100 s : (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.4
 Del. quantity cm³/ : 1.3...1.9
 100 s : (1.0...2.2)

Spread cm³ : 0.5
 100 s : (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40
 2nd speed rpm : 600
 travel mm : 4.90...5.10
 3rd speed rpm : 1075
 travel mm : 7.40...7.60
 4th speed rpm : 1100
 travel mm : 8.00...8.20
 5th speed rpm : 1150
 travel mm : 9.00...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1125
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 500
Aneroid pressure h: 650
Del.quantity : 204.0...206.0
1000 : (201.0...209.0)
Spread cm³ : 4.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:
1st rack travel in: 11.70
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack trave: 7.70
Speed rpm : 300
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 1.40
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.30...12.50

F09

2nd pressure hPa : 400
Rack travel in m: 13.30...13.60
3rd pressure hPa : 850
Rack travel in m: 14.10...14.20 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm³/ : 178.0...181.0
1000 s: (175.0...184.0)
Spread cm³ : 7.00
1000 s: (10.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 7.00
1000 s: (10.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm³/ : 202.0...206.0
1000 s: (199.0...209.0)
Spread cm³ : 7.00
1000 s: (10.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 146.0...148.0
1000 s: (143.0...151.0)
Spread cm³ : 7.00
1000 s: (10.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with

respect to setting at least 0.1 mm



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 e
Edition : 17.05.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQV350..1050PA842-3
Governor no. : 0 421 813 622

Customer-spec. information
Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del. quantity cm³/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
travel mm : 0.80...1.20

2nd speed rpm : 510
travel mm : 3.60...4.10

3rd speed rpm : 1100
travel mm : 7.80...8.40

4th speed rpm : 1270
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h : 750
Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 14.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack trave: 7.40
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 975
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.20...12.40
2nd pressure hPa : 550
Rack travel in m: 13.60...13.80
3rd pressure hPa : 900
Rack travel in m: 14.70...14.80
4th pressure hPa : 1250

F12

Rack travel in m: 15.50...15.70
5th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm³/ : 227.0...230.0
1000 s: (224.0...233.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 900
Del.quantity cm³/ : 238.0...242.0
1000 s: (235.0...245.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm³/ : 156.0...159.0
1000 s: (153.0...162.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 e 2
 Edition : 08.06.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 831

Injection pump
 Pump designation : PE8P120A320LS7801-1
 EP type number : 0 412 628 818
 Governor
 Governor design. : RQV350..1050PA842-7
 Governor no. : 0 421 813 874

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1

Phasing : 0-45-90-135-180-225-
 : 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm³/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.7...5.9

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 0.80...1.20

2nd speed rpm : 510
 travel mm : 3.60...4.10

3rd speed rpm : 1100
 travel mm : 7.80...8.40

4th speed rpm : 1270
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:

1st rack travel in: 14.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 100
Minimum rack travel: 7.40
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.20
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 975
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.50...14.70

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.20...12.40
2nd pressure hPa : 550
Rack travel in m: 13.60...13.80
3rd pressure hPa : 900
Rack travel in m: 14.70...14.80

4th pressure hPa : 1250
Rack travel in m: 15.50...15.70
5th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm³/ : 227.0...230.0
1000 s: (224.0...233.0)
Spread cm³ : 8.00
1000 s: (12.)

Aneroid pressure h: 1250
Speed rpm : 900
Del.quantity cm³/ : 238.0...242.0
1000 s: (235.0...245.0)
Spread cm³ : 8.00
1000 s: (12.00)

Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm³/ : 156.0...159.0
1000 s: (153.0...162.0)
Spread cm³ : 8.00
1000 s: (12.00)

Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a10
 Edition : 30.03.90
 Replaces : 1.9.89
 Test oil : ISO-4113

Combination no. : 0 402 648 833

Injection pump
 Pump designation : PE8P120A320LS7801-1
 EP type number : 0 412 628 818
 Governor
 Governor design. : RQV350..1050PA866-3
 Governor no. : 0 421 813 703

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del. quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.6...6.0

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 1100

travel mm : 8.00...8.50

4th speed rpm : 1170

travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1090

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1100
Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 118...126

Testing:
1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 67...75

Testing:
Speed rpm : 250
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.60...5.80

CONSTANT REGULATION
Speed rpm : 350...550

TORQUE CONTROL
Dimension a mm : 1.60
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 750
Rack travel in m: 14.40...14.60
3rd speed rpm : 950
Rack travel in m: 13.50...13.60
4th speed rpm : 830
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.20...11.50

Measurement
Speed 1/min : 600

1st pressure hPa : 420

Rack travel in m: 11.90...12.10
2nd pressure hPa : 600
Rack travel in m: 13.60...13.80

START CUT-OUT

Speed 1/min : 270 (250)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 152.0...154.0 *
1000 s: (149.0...157.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack travel: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a 8
 Edition : 01.02.90
 Replaces : 7.7.89
 Test oil : ISO-4113

Combination no. : 0 402 648 841

Injection pump
 Pump designation : PE8P120A320LS7801-1
 EP type number : 0 412 628 818
 Governor
 Governor design. : RQ300/1050PA762-5
 Governor no. : 0 421 801 399

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 20.3...20.5
 100 s: (20.0...20.8)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.6
 Del. quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEV/E POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 500
 Aneroid pressure h: 650
 Del. quantity : 203.0...205.0
 1000 : (200.0...208.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.3

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.20...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.70...12.90
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

F18

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 j
 Edition : 06.07.90
 Replaces : 2.10.89
 Test oil : ISO-4113

Combination no. : 0 402 648 844

Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQ300/1050PA717-2
 Governor no. : 0 421 801 439

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.6...23.9

100 s: (23.3...24.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.5
 100 s: (0.8)

GUIDE SLEFVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 900
 Del.quantity : 236.0...239.0
 1000 : (233.0...242.0)
 Spread cm³ : 4.00
 1000 : (7.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 850
Rack travel in m: 15.00...15.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90
4th pressure hPa : 1350
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm3 : 7.00
1000 s: (10.)
Aneroid pressure h: 1600
Speed rpm : 850
Del.quantity cm3/ : 265.0...269.0
1000 s: (262.0...272.0)
Spread cm3 : 7.00
1000 s: (10.00)
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 7.00
1000 s: (10.00)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k
 Edition : 06.07.90
 Replaces : 6.10.89
 Test oil : ISO-4113

Combination no. : 0 402 648 845

Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQV300..1050PA797-5
 Governor no. : 0 421 813 702

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.6...23.9

100 s: (23.3...24.2)

Spread cm³ : 0.4

100 s: (0.7)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.5

100 s: (0.8)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.20...1.40

2nd speed rpm : 800
 travel mm : 5.80...6.10

3rd speed rpm : 1120
 travel mm : 8.20...8.80

4th speed rpm : 1180
 travel mm : 9.60...10.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 900
Del.quantity : 236.0...239.0
1000 : (233.0...242.0)
Spread cm³ : 4.00
1000 : (7.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 1.30
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *

4th pressure hPa : 1350
Rack travel in m: 14.50...14.70
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 248.0...252.0
1000 s: (245.0...255.0)
Spread cm³ : 7.00
1000 s: (10.)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 265.0...269.0
1000 s: (262.0...272.0)
Spread cm³ : 7.00
1000 s: (10.00)
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm³ : 7.00
1000 s: (10.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with
respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 n
 Edition : 05.03.90
 Replaces : 29.3.89
 Test oil : ISO-4113

Combination no. : 0 402 648 852

Injection pump
 Pump designation : PE8P120A920/4LS7166
 EP type number : 0 412 628 832
 Governor
 Governor design. : RQ750PA758-2
 Governor no. : 0 421 801 462

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.50...12.60

Del. quantity cm³/ : 25.2...25.4

100 s: (24.9...25.7)

Spread cm³ : 0.7

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del. quantity : 252.0...254.0
 1000 : (249.0...257.0)

Spread cm³ : 7.00
 1000 : (10.00)

RATED SPEED

1st version
 Control lever
 position degrees: 88...96

Testing:
 1st rack travel in: 11.50
 Speed rpm : 750...755
 2nd rack travel in: 4.00
 Speed rpm : 784...797
 4th rack travel in: 850
 Speed rpm : 0.00...1.00

BREAKAWAY

1st version
 1mm rack travel less than
 full load rack tr: 11.50
 Speed rpm : 750...755

HIGH IDLE

1st version

Rack travel in mm : 5.00...5.20
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:

:

Start-of-delivery setting with ROBO
diaphragm.

APPLICATION

Generator

Generator set



BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,0 h3
 Edition : 12.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 853
 Injection pump
 Pump designation : PE8P120A920/4LS7125
 EP type number : 0 412 628 833
 Governor
 Governor design. : RQV350...1050PA795-2
 Governor no. : 0 421 813 721

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

 Rack travel in mm : 13.50...13.60

 Del.quantity cm³/ : 21.4...21.6
 100 s: (21.1...21.9)

 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.6...5.0
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL
 2nd speed rpm : 350
 travel mm : 1.30...1.70
 3rd speed rpm : 650
 travel mm : 4.10...4.70
 4th speed rpm : 1095
 travel mm : 7.80...8.00
 5th speed rpm : 1215
 travel mm : 9.10...9.50

GUIDE SLEEVE POSITION
 Control-lever position
 Degree: -1
 Speed rpm : 1170
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del.quantity : 214.0...216.0
 1000 : (211.0...219.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 100...108

Testing:
1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack trave: 10.50
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 950
Del.quantity cm3/ : 203.0...211.0
1000 s: (201.0...213.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...290.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 17,2 e
 Edition : 08.06.90
 Replaces : 13.12.89
 Test oil : ISO-4113
 Combination no. : 0 402 648 854
 Injection pump
 Pump designation : PE8P130A920/5LS7822
 EP type number : 0 412 638 802
 Governor
 Governor design. : RQV300...950PA905
 Governor no. : 0 421 813 723

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8280.42.001

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 40...45
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder assembly : 1 688 901 105
 Opening pressure, bar : 207...210
 Orifice plate diameter mm : 0,8
 Test lines : 1 688 750 015
 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.10...5.20
 : (5.05...5.25)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 8- 4- 3- 6- 5-
 7- 2

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550
 Rack travel in mm : 11.60...11.70
 Del.quantity cm³/ : 23.5...23.8
 100 s: (23.1...24.1)
 Spread cm³ : 0.8
 100 s: (1.2)

2nd speed rpm : 300.0
 Rack travel in mm : 6.1...6.5
 Del.quantity cm³/ : 2.0...2.6
 100 s: (1.6...3.0)
 Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225
 travel mm : 0.60...1.10
 2nd speed rpm : 350
 travel mm : 2.10...2.50
 3rd speed rpm : 600
 travel mm : 3.80...4.40
 4th speed rpm : 950
 travel mm : 7.20...7.40
 5th speed rpm : 1200
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1020
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 550
 Aneroid pressure h: 900
 Del.quantity : 235.0...238.0
 1000 : (231.5...241.5)

Spread cm³ : 8.00
1000 : (12.00)

RATED SPEED

1st version
Control lever
position degrees: 109...117

Testing:
1st rack travel in: 10.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 63...71

Testing:
Speed rpm : 200
Minimum rack travel: 7.70
Speed rpm : 300
Rack travel in mm : 6.20...6.40

CONSTANT REGULATION
Speed rpm : 380...480

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 11.60...11.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.50...9.80
2nd pressure hPa : 440
Rack travel in m: 11.10...11.20
3rd pressure hPa : 400
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 215.0...222.0
1000 s: (211.5...225.5)
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 173.0...176.0
1000 s: (169.5...179.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...240.0
1000 s: (206.0...244.0)

Remarks:

:

Check electrically unlatched starting
fuel delivery (EES) with 24 volt.

On activation of the starting solenoid,
the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 o
Edition : 12.02.90
Replaces : 13.12.89
Test oil : ISO-4113
Combination no. : 0 402 648 855
Injection pump
Pump designation : PE8P120A32OLS7823
EP type number : 0 412 628 835
Governor
Governor design. : RQV350..1050PA870-5
Governor no. : 0 421 813 735

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kw : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEF/E TRAVEL

1st speed rpm : 350
travel mm : 1.40...1.60

2nd speed rpm : 800
travel mm : 4.70...5.10

3rd speed rpm : 1100
travel mm : 7.60...8.20

4th speed rpm : 1175
travel mm : 9.20...9.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0
1000 : (231.0...240.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:
1st rack travel in: 13.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 62...70

Testing:
Speed rpm : 250
Minimum rack travel: 7.10
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 0.50
2nd speed rpm : 1050
Rack travel in m: 14.40...14.60
3rd speed rpm : 800
Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 500
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1250
Rack travel in m: 14.50...14.70

5th pressure hPa : -
Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm3 : 8.00
1000 s: (12.)

Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.00)

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm3/ : 184.0...187.0
1000 s: (181.0...190.0)
Spread cm3 : 8.00
1000 s: (12.00)

Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 m
Edition : 12.02.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 863
Injection pump
Pump designation : PE8P120A920/4LS7180
EP type number : 0 412 628 837
Governor
Governor design. : RQV350...1050PA795-6
Governor no. : 0 421 813 754

Customer-spec. information
Customer : SCANIA

Engine : DSI 14

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5- 6- 8

Phasing : 0-45-90-135-180-225-270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.20...13.30
Del.quantity cm3/ : 26.8...27.0
100 s: (26.5...27.3)
Spread cm3 : 0.7
100 s: (1.0)

2nd speed rpm : 350.0
Rack travel in mm : 4.5...4.9
Del.quantity cm3/ : 1.5...1.9
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 350
travel mm : 1.30...1.70
3rd speed rpm : 650
travel mm : 4.10...4.70
4th speed rpm : 1145
travel mm : 7.80...8.00
5th speed rpm : 1255
travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1
Speed rpm : 1230
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Del.quantity : 268.0...270.0
1000 : (265.0...273.0)
Spread cm3 : 7.00
1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:
1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 68...76

Testing:
Speed rpm : 100
Minimum rack trave: 10.30
Speed rpm : 350
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 1050
Del.quantity cm³/ : 258.0...266.0
1000 s: (256.0...268.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.20
Speed rpm : 1090...1100

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.50...4.70

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 g
 Edition : 19.06.90
 Replaces : 24.11.89
 Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQ300/950PA762-7
 Governor no. : 0 421 801 480

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del.quantity cm³/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEFVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000

Del.quantity : 254.0...256.0

1000 : (251.0...259.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 950
Rack travel in m: 15.20...15.40
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 12.20...12.40
2nd pressure hPa : 700
Rack travel in m: 13.90...14.10
3rd pressure hPa : 1200
Rack travel in m: 14.80...15.00
4th pressure hPa : 1500
Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 270.0...273.0
1000 s: (267.0...276.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,0 h4
Edition : 12.02.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 866
Injection pump
Pump designation : PE8P120A920/4LS7125
EP type number : 0 412 628 833
Governor
Governor design. : RQV350...1050PA795-7
Governor no. : 0 421 813 768

Customer-spec. information
Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 015

Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant. per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5- 6- 8

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 13.50...13.60
Del.quantity cm3/ : 21.4...21.6
100 s: (21.1...21.9)
Spread cm3 : 0.6
100 s: (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 4.6...5.0
Del.quantity cm3/ : 1.5...1.9
100 s: (-)
Spread cm3 : 0.3
100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL
2nd speed rpm : 350
travel mm : 1.30...1.70
3rd speed rpm : 650
travel mm : 4.10...4.70
4th speed rpm : 1095
travel mm : 7.80...8.00
5th speed rpm : 1215
travel mm : 9.10...9.50

GUIDE SLEEVE POSITION
Control-lever position Degree: -1
Speed rpm : 1170
Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 100...108

Testing:
1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1200...1230
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 69...77

Testing:
Speed rpm : 100
Minimum rack travel: 10.50
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.60
2nd pressure hPa : 365
Rack travel in m: 12.80...12.90
3rd pressure hPa : 215
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 203.0...211.0
1000 s: (201.0...213.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1990-01-11

Start of delivery - engine: 16° before
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 n1
Edition : 12.02.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 867
Injection pump
Pump designation : PE8P120A920/4LS7166
EP type number : 0 412 628 832
Governor
Governor design. : RQ750PA758-7
Governor no. : 0 421 801 490

Customer-spec. information
Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42
Overflow valve : 1 417 413 025
Inlet press., bar : 1.50
Test nozzle holder assembly : 1 688 901 019
Opening pressure, bar : 207...210
Orifice plate diameter mm : 0,8
Test lines : 1 680 750 015
Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5- 6- 8

Phasing : 0-45-90-135-180-225-270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
Rack travel in mm : 12.50...12.60
Del.quantity cm3/ : 25.2...25.4
100 s: (24.9...25.7)
Spread cm3 : 0.7
100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 252.0...254.0
1000 : (249.0...257.0)
Spread cm3 : 7.00
1000 : (10.00)

RATED SPEED

1st version
Testing:
1st rack travel in: 11.50
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 784...797
4th rack travel in: 850
Speed rpm : 0.00...1.00

Aneroid/Altitude Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.50...12.60

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...10.10
2nd pressure hPa : 365
Rack travel in m: 11.80...11.90
3rd pressure hPa : 215
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.50
Speed rpm : 750...755

HIGH IDLE

1st version
Rack travel in mm : 5.00...5.20
Spread cm³ : 4.00
1000 s: (7.00)

Remarks:
:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1990-01-11

Start of delivery - engine: 18° before
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

APPLICATION

Generator

Generator set

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,2 m1
 Edition : 12.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 868
 Injection pump
 Pump designation : PE8P120A920/4LS7180
 EP type number : 0 412 628 837
 Governor
 Governor design. : RQV350...1050PA795-8
 Governor no. : 0 421 813 770

Customer-spec. information
 Customer : SCANIA

Engine : DSI 14

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness : 6.00X1.50X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-
 6- 8

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700
 Rack travel in mm : 13.20...13.30
 Del.quantity cm³/ : 26.8...27.0
 100 s: (26.5...27.3)
 Spread cm³ : 0.7
 100 s: (1.0)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 350
 travel mm : 1.30...1.70
 3rd speed rpm : 650
 travel mm : 4.10...4.70
 4th speed rpm : 1145
 travel mm : 7.80...8.00
 5th speed rpm : 1255
 travel mm : 8.80...9.20

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1325
 Rack travel in mm : 6.00...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 268.0...270.0
 1000 : (265.0...273.0)
 Spread cm³ : 7.00
 1000 : (10.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:

1st rack travel in: 12.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1215...1245
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 68...76

Testing:

Speed rpm : 100
Minimum rack travel: 10.30
Speed rpm : 350
Rack travel in mm : 4.50...4.70
Rack travel in mm : 2.00
Speed rpm : 370...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.20...13.30

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...10.10
2nd pressure hPa : 365
Rack travel in m: 11.80...11.90
3rd pressure hPa : 215
Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1050
Del.quantity cm³/ : 258.0...266.0
1000 s: (256.0...268.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 110.0...150.0
1000 s: (-)
Rack travel in mm : 9.70...10.10

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1990-01-15

Start of delivery - engine: 20° before
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a20
 Edition : 05.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 870
 Injection pump
 Pump designation : PE8P120A320LS7801-1
 EP type number : 0 412 628 818
 Governor
 Governor design. : RQV350..1050PA866-6
 Governor no. : 0 421 813 810

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.4...6.0

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.40...1.60

2nd speed rpm : 800
 travel mm : 4.80...5.10

3rd speed rpm : 1100
 travel mm : 7.70...8.10

4th speed rpm : 1175
 travel mm : 9.00...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050
Aneroid pressure h: 1100
Del.quantity : 181.0...183.0
1000 : (178.0...186.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:

1st rack travel in: 11.80
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...72

Testing:

Speed rpm : 200
Minimum rack travel: 7.50
Speed rpm : 350
Rack travel in mm : 5.40...6.00

CONSTANT REGULATION

Speed rpm : 350...550

TORQUE CONTROL

Dimension a mm : 1.50
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 700
Rack travel in m: 14.30...14.50
3rd speed rpm : 950
Rack travel in m: 13.50...13.60
4th speed rpm : 830
Rack travel in m: 14.30...14.50

Aneroid/Altitude
Compensator Test

1st version

Setting

Speed rpm : 600
Pressure hPa : -
Rack travel mm : 11.00...11.30

Measurement

Speed 1/min : 600

1st pressure hPa : 420

Rack travel in m: 11.70...11.90
2nd pressure hPa : 600
Rack travel in m: 13.30...13.50

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100
Speed rpm : 700
Del.quantity cm³/ : 213.0...217.0
1000 s: (210.0...220.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1100
Speed rpm : 1050
Del.quantity cm³/ : 152.0...154.0 *
1000 s: (149.0...157.0)
Spread cm³ : 8.00
1000 s: (12.00)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 143.0...145.0
1000 s: (140.0...148.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a18
 Edition : 05.03.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 871

Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RQ300/1050PA932
 Governor no. : 0 421 801 494

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 20.1...20.3
 100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.0...6.4
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 500
 Aneroid pressure h: 650
 Del.quantity : 201.0...203.0
 1000 : (198.0...206.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.80
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 1050
Rack travel in m: 12.80...13.00
3rd speed rpm : 850
Rack travel in m: 13.70...14.00
4th speed rpm : 700
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.40...13.70
3rd pressure hPa : 850
Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.40...11.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1050
Speed rpm : 1050
Del.quantity cm3/ : 180.0...183.0
1000 s: (177.0...186.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 700
Del.quantity cm3/ : 215.0...219.0
1000 s: (212.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1050
Speed rpm : 850
Del.quantity cm3/ : 206.0...210.0
1000 s: (203.0...213.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 p 1
 Edition : 05.03.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 648 875

Injection pump
 Pump designation : PE8P120A320LS7816-1
 EP type number : 0 412 628 841
 Governor
 Governor design. : RQ300/1050PA717-2
 Governor no. : 0 421 801 439

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm³/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.30...14.50
3rd speed rpm : 850
Rack travel in m: 15.00...15.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1350
Rack travel in m: 14.60...14.80
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 850
Del.quantity cm³/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 t
Edition : 12.04.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 648 876

Injection pump
Pump designation : PE8P120A320LS7816
EP type number : 0 412 628 829
Governor
Governor design. : RQ300/1050PA932-1
Governor no. : 0 421 801 509

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
: (5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/ : 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEFVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 234.0...237.0

1000 : (231.0...240.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.30
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 14.30...14.50
3rd speed rpm : 850
Rack travel in m: 15.00...15.30

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.60...13.80

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 11.10...11.30
2nd pressure hPa : 650
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1350
Rack travel in m: 14.60...14.80
5th pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050

Del.quantity cm3/ : 252.0...256.0
1000 s: (249.0...259.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 850
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.30
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Rack travel in mm : 10.20...10.50

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a17
 Edition : 01.02.90
 Replaces : 1.12.89
 Test oil : ISO-4113

Combination no. : 0 402 648 879

Injection pump
 Pump designation : PE8P120A320LS7801-4
 EP type number : 0 412 628 839
 Governor
 Governor design. : RQV350..1050PA842-5
 Governor no. : 0 421 813 836

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.50...14.70

Del.quantity cm³/ : 21.2...21.4

100 s: (20.9...21.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 5.7...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.6
 100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.10
 2nd speed rpm : 700
 travel mm : 4.00...4.40
 3rd speed rpm : 1100
 travel mm : 6.80...7.20
 4th speed rpm : 1200
 travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1185
 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 212.0...214.0
1000 : (209.0...217.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 110...118

Testing:
1st rack travel in: 14.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1190...1220
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1
Control lever
position degrees: 66...74

Testing:
Speed rpm : 100
Minimum rack travel: 7.40
Speed rpm : 350
Rack travel in mm : 5.50...6.10

CONSTANT REGULATION
Speed rpm : 350...550

TORQUE CONTROL
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 975
Rack travel in m: 15.40...15.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 750
Rack travel mm : 14.50...14.70

Measurement
Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 12.20...12.40
2nd pressure hPa : 550
Rack travel in m: 13.60...13.80
3rd pressure hPa : 900
Rack travel in m: 14.70...14.80
4th pressure hPa : 1250

Rack travel in m: 15.40...15.60
5th pressure hPa : -
Rack travel in m: 11.60...11.80

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm³/ : 227.0...230.0
1000 s: (224.0...233.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 900
Del.quantity cm³/ : 238.0...242.0
1000 s: (235.0...245.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1250
Speed rpm : 1050
Del.quantity cm³/ : 156.0...159.0 *
1000 s: (153.0...162.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:
:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a19
Edition : 02.02.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 648 880
Injection pump
Pump designation : PE8P120A320LS7801-1
EP type number : 0 412 628 818
Governor
Governor design. : RQ300/1050PA717
Governor no. : 0 421 801 258

Customer-spec. information
Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0
Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 100...120

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
(5.15...5.35)
Rack travel in mm : 20.00...21.00
Firing order : 8- 7- 2- 6- 3- 5-
4- 1

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/ : 22.0...22.2
100 s: (21.7...22.5)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 6.1...6.7
Del.quantity cm3/ : 1.6...2.2
100 s: (1.3...2.5)
Spread cm3 : 0.6
100 s: (1.0)

GUIDE SLEEFVE POSITION

Control-lever position
Degree: -2
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 680
Del.quantity : 220.0...222.0
1000 : (217.0...225.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Setting point:
Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.4

Testing:

Speed rpm : 200
Minimum rack travel: 8.00
Speed rpm : 300
Rack travel in mm : 6.10...6.70
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 1050
Rack travel in m: 15.20...15.40
3rd speed rpm : 850
Rack travel in m: 15.80...16.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.70...14.90

Measurement

Speed 1/min : 600

1st pressure hPa : 310
Rack travel in m: 12.10...12.30
2nd pressure hPa : 470
Rack travel in m: 13.70...13.90
3rd pressure hPa : 820
Rack travel in m: 14.90...15.00
4th pressure hPa : 1100
Rack travel in m: 15.90...16.00
5th pressure hPa : -
Rack travel in m: 11.40...11.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1150
Speed rpm : 1050
Del.quantity cm3/ : 229.0...232.0
1000 s: (226.0...235.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1150
Speed rpm : 850
Del.quantity cm3/ : 247.0...251.0
1000 s: (244.0...254.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 149.0...151.0
1000 s: (146.0...154.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 200.0...220.0
1000 s: (196.0...224.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 k 1
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 648 881

 Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQV300..950PA797-13
 Governor no. : 0 421 813 841

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 353.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.60...14.80

Del. quantity cm³/ : 25.4...25.6

100 s: (25.1...25.9)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.5

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.40

2nd speed rpm : 700
 travel mm : 5.50...6.00

3rd speed rpm : 1100
 travel mm : 8.30...8.80

4th speed rpm : 1090
 travel mm : 9.70...10.20

5th speed rpm : 1190
 travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1000

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 1000
Del.quantity : 254.0...256.0
1000 : (251.0...259.0)
Spread cm3 : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 120...128

Testing:

1st rack travel in: 14.20
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack trave: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50

CONSTANT REGULATION

Speed rpm : 300...500

TORQUE CONTROL

Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 15.20...15.40
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 12.00...12.20
2nd pressure hPa : 700
Rack travel in m: 13.80...14.00

3rd pressure hPa : 1200
Rack travel in m: 14.80...15.00
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 10.20...10.50

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950
Del.quantity cm3/ : 270.0...273.0
1000 s: (267.0...276.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks: :

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a21
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 882
 Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RQV300..950PA797-14
 Governor no. : 0 421 813 842

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 269.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 600

travel mm : 4.80...5.30

3rd speed rpm : 950

travel mm : 7.60...8.10

4th speed rpm : 1050

travel mm : 9.00...9.50

5th speed rpm : 1100

travel mm : 9.90...10.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 990

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 500
Aneroid pressure h: 800
Del.quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 117...125

Testing:
1st rack travel in: 11.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 84...92

Testing:
Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40

CONSTANT REGULATION
Speed rpm : 300...500

TORQUE CONTROL
Dimension a mm : 0.30
2nd speed rpm : 950
Rack travel in m: 12.90...13.10
3rd speed rpm : 800
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 14.00...14.20

Measurement
Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 11.80...12.00
2nd pressure hPa : 500
Rack travel in m: 13.30...13.60

3rd pressure hPa : 950
Rack travel in m: 14.10...14.20 *
4th pressure hPa : -
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1150
Speed rpm : 950
Del.quantity cm³/ : 190.0...193.0
1000 s: (187.0...196.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1150
Speed rpm : 750
Del.quantity cm³/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MTU 14,6 a
 Edition : 29.05.90
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 648 884

 Injection pump
 Pump designation : PE8P120A320LS7830
 EP type number : 0 412 628 844
 Governor
 Governor design. : RQV350..1150PA870-4
 Governor no. : 0 421 813 717

Customer-spec. information
 Customer : MTU

Engine : 8V 183 TE92

1st version kW : 490.0
 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50
 : (4.35...4.55)
 Rack travel in mm : 19.50...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 : 4- 1

Phasing : 0-45-90-135-180-225-
 : 270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 14.80...14.90

Del. quantity cm³/ : 31.0...31.2

100 s: (30.7...31.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.90...2.40

2nd speed rpm : 500
 travel mm : 3.00...3.50

3rd speed rpm : 800
 travel mm : 4.30...4.80

4th speed rpm : 1200
 travel mm : 8.30...8.90

5th speed rpm : 1250
 travel mm : 9.30...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1150
Aneroid pressure h: 2000
Del.quantity : 310.0...312.0
1000 : (307.0...315.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 113...121

Testing:
1st rack travel in: 13.80
Speed rpm : 1190...1200
2nd rack travel in: 4.00
Speed rpm : 1270...1300
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 62...70

Testing:
Speed rpm : 250
Minimum rack travel: 7.00
Speed rpm : 350
Rack travel in mm : 5.00...5.60

CONSTANT REGULATION
Speed rpm : 350...600

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 7.10...7.30

Measurement
Speed 1/min : 500

1st pressure hPa : 400
Rack travel in m: 7.60...7.70
2nd pressure hPa : 1200
Rack travel in m: 11.80...12.10

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

H02

1st version
Aneroid pressure h: 2000
Speed rpm : 750
Del.quantity cm³ : 303.0...313.0
1000 s: (300.0...316.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 1150
Del.quantity cm³ : 240.0...243.0 *
1000 s: (237.0...246.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³ : 120.0...122.0
1000 s: (117.0...125.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.80
Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³ : 320.0...340.0
1000 s: (316.0...344.0)

Remarks:

:

* = Set at reduced-delivery stop.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 t 1
 Edition : 30.03.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 889
 Injection pump
 Pump designation : PE8P120A320LS7816
 EP type number : 0 412 628 829
 Governor
 Governor design. : RQ300/950PA932-2
 Governor no. : 0 421 801 526

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 362.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 600
 Rack travel in mm : 14.60...14.80
 Del.quantity cm³/ : 25.4...25.6
 100 s: (25.1...25.9)

Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.9...6.5
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.6
 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2
 Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 600
 Aneroid pressure h: 1000
 Del.quantity : 254.0...256.0
 1000 : (251.0...259.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 14.20
Speed rpm : 990...1005
2nd rack travel in: 4.00
Speed rpm : 1070...1100
4th rack travel in: 1150
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack travel: 7.80
Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.90
2nd speed rpm : 950
Rack travel in m: 15.20...15.40
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1000
Rack travel mm : 14.60...14.80

Measurement

Speed 1/min : 600

1st pressure hPa : 350
Rack travel in m: 12.20...12.40
2nd pressure hPa : 700
Rack travel in m: 13.80...14.00
3rd pressure hPa : 1200
Rack travel in m: 14.80...15.00
4th pressure hPa : 1500
Rack travel in m: 15.60...15.80
5th pressure hPa : -
Rack travel in m: 10.20...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 950

Del.quantity cm3/ : 270.0...273.0
1000 s: (267.0...276.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm3/ : 270.0...274.0
1000 s: (267.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.20
Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 a22
 Edition : 12.04.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 648 890
 Injection pump
 Pump designation : PE8P120A320LS7801
 EP type number : 0 412 628 806
 Governor
 Governor design. : RQ300/950PA932-4
 Governor no. : 0 421 801 533

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 269.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 8- 7- 2- 6- 3- 5-
 4- 1

Phasing : 0-45-90-135-180-225-
 270-315
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 500

Aneroid pressure h: 800

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.90
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1060...1090
4th rack travel in: 1200
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.2

Testing:

Speed rpm : 200
Minimum rack trave: 8.00
Speed rpm : 300
Rack travel in mm : 6.00...6.40
Rack travel in mm : 2.00
Speed rpm : 380...420

TORQUE CONTROL

Dimension a mm : 0.75
2nd speed rpm : 950
Rack travel in m: 12.90...13.10
3rd speed rpm : 800
Rack travel in m: 14.20...14.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 800
Rack travel mm : 14.00...14.20

Measurement

Speed 1/min : 600
1st pressure hPa : 350
Rack travel in m: 11.80...12.00
2nd pressure hPa : 500
Rack travel in m: 13.30...13.60
3rd pressure hPa : 950
Rack travel in m: 14.10...14.20 *
4th pressure hPa : -
Rack travel in m: 10.60...11.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

H06

Aneroid pressure h: 1150
Speed rpm : 950
Del.quantity cm3/ : 190.0...193.0
1000 s: (187.0...196.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 1150
Speed rpm : 750
Del.quantity cm3/ : 216.0...219.0
1000 s: (213.0...222.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 138.0...140.0
1000 s: (135.0...143.0)
Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...190.0
1000 s: (171.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 18,3 L 3
 Edition : 01.02.90
 Replaces : 24.11.89
 Test oil : ISO-4113

Combination no. : 0 402 649 810

Injection pump
 Pump designation : PE10P120A320LS7809
 EP type number : 0 412 629 800
 Governor
 Governor design. : RQV350..1050PA870-6
 Governor no. : 0 421 813 766

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM443 LA

1st version kW : 401.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 130...150

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
 Rack travel in mm : 20.00...21.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.30...14.50

Del.quantity cm³/ : 21.0...21.4

100 s: (20.7...21.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 6.2...6.8

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.6

100 s: (1.0)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.10

2nd speed rpm : 700

travel mm : 4.10...4.50

3rd speed rpm : 1100

travel mm : 7.60...8.00

4th speed rpm : 1200

travel mm : 9.50...9.90

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600
Aneroid pressure h: 750
Del.quantity : 210.0...214.0
1000 : (207.0...217.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 114...122

Testing:

1st rack travel in: 14.10
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1155...1185
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 64...-72

Testing:

Speed rpm : 200
Minimum rack travel: 8.60
Speed rpm : 350
Rack travel in mm : 6.20...6.80

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.40
2nd speed rpm : 1050
Rack travel in m: 15.10...15.30
3rd speed rpm : 800
Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 14.30...14.50

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 11.70...11.90
2nd pressure hPa : 550
Rack travel in m: 13.20...13.40
3rd pressure hPa : 960
Rack travel in m: 14.40...14.50 *

4th pressure hPa : 1100
Rack travel in m: 14.80...15.00
5th pressure hPa : -
Rack travel in m: 11.10...11.40

START CUT-OUT

Speed 1/min : 270 (290)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm³/ : 224.0...226.0
1000 s: (221.0...229.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 850
Del.quantity cm³/ : 232.0...236.0
1000 s: (229.0...239.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1300
Speed rpm : 1050
Del.quantity cm³/ : 168.0...170.0
1000 s: (165.0...173.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 132.0...136.0
1000 s: (129.0...139.0)
Spread cm³ : 8.00
1000 s: (-)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...260.0
1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 j
Edition : 19.06.90
Replaces : -
Test oil : ISO-4113
Combination no. : 0 402 649 811
Injection pump
Pump designation : PE10P120A520LS7831
EP type number : 0 412 629 806
Governor
Governor design. : RQ300/950PA950
Governor no. : 0 421 801 520

Customer-spec. information
Customer : MAN

Engine : D 2840 LF

1st version kW : 368.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)
Rack travel in mm : 13.00...14.00
Firing order : 10- 9- 4- 1- 8- 7
- 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
216-261-288-333
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.90...8.10
& maximum rack tra: 13.0...14.0
Difference ° CS : 0.25...2.75

BASIC SETTING

1st speed rpm : 950
Rack travel in mm : 13.50...13.60

Del.quantity cm3/ : 22.9...23.1
100 s: (22.6...23.4)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 300.0
Rack travel in mm : 5.0...5.4
Del.quantity cm3/ : 1.7...2.3
100 s: (1.4...2.6)
Spread cm3 : 0.8
100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
Degree: 108
Speed rpm : 600
Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 950
Aneroid pressure h: 1000
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600
Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.50
Speed rpm : 995...1010
2nd rack travel in: 4.00
Speed rpm : 1040...1070
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack trave: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 950
Rack travel in m: 13.70...13.80
2nd speed rpm : 600
Rack travel in m: 13.70...13.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 200
Rack travel in m: 11.10...11.20
3rd pressure hPa : 500
Rack travel in m: 12.70...13.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm3/ : 222.0...228.0
1000 s: (219.0...231.0)
Speed rpm : 600
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 151.0...153.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 995...1010

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7014

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 18,2 k
 Edition : 29.06.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 649 812
 Injection pump
 Pump designation : PE10P120A520LS7831
 EP type number : 0 412 629 806
 Governor
 Governor design. : RQV300...950PA949
 Governor no. : 0 421 813 855

Customer-spec. information
 Customer : MAN

Engine : D 2840 LF

1st version kW : 368.0
 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 13.00...14.00
 Firing order : 10- 9- 4- 1- 8- 7
 - 6- 3- 5- 2

Phasing : 0-45-72-117-144-189-
 216-261-288-333
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.40...5.60
 & maximum rack tra: 13.0...14.0
 Difference ° CS : 1.25...2.75

BASIC SETTING

1st speed rpm : 950

Rack travel in mm : 13.50...13.60

Del. quantity cm³/ : 22.9...23.1
 100 s: (22.6...23.4)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 5.0...5.4
 Del. quantity cm³/ : 1.7...2.3
 100 s: (1.4...2.6)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 995
 travel mm : 10.10...10.30
 2nd speed rpm : 300
 travel mm : 1.20...1.40
 3rd speed rpm : 800
 travel mm : 6.40...6.80
 4th speed rpm : 1200
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1000
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 950
Aneroid pressure h: 1000
Del.quantity : 229.0...231.0
1000 : (226.0...234.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.50
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1030...1060
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 58...66

Testing:

Speed rpm : 100
Minimum rack travel: 6.70
Speed rpm : 300
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

Speed rpm : 310...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1000
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.70...10.90
2nd pressure hPa : 200
Rack travel in m: 11.10...11.20
3rd pressure hPa : 500
Rack travel in m: 12.70...13.00

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000
Speed rpm : 600
Del.quantity cm³/ : 222.0...228.0
1000 s: (219.0...231.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 151.0...153.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.50
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm³/ : 17.0...23.0
1000 s: (14.0...26.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7015

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 21,9 j 1
 Edition : 19.06.90
 Replaces : 30.3.90
 Test oil : ISO-4113

 Combination no. : 0 402 670 804

 Injection pump
 Pump designation : PE12P120A320LS7813-1
 EP type number : 0 412 620 811
 Governor
 Governor design. : RSV350...750POA825-5
 Governor no. : 0 421 833 277

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : OM 444 LA

1st version kw : 441.0

Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve
: 1 417 413 025

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 150...170

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 16.50...16.60

Del.quantity cm³/ : 28.0...28.2

100 s: (27.7...28.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.9

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 280.0...282.0

1000 : (277.0...285.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 20...28

Testing:

1st rack travel in: 15.50
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 775...788
4th rack travel in: 900
Speed rpm : 0.30...1.70

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.7
Speed rpm : 350
Rack travel in mm : 5.50...5.90

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

:

Observe VDT-I-420/120

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 22,0 d
 Edition : 06.04.90
 Replaces : 13.12.89
 Test oil : ISO-4113

Combination no. : 0 402 670 807

Injection pump
 Pump designation : PE12P120A320LS7814-1
 EP type number : 0 412 620 819
 Governor
 Governor design. : RSV375..1050POA535-3
 Governor no. : 0 421 833 328

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kw : 588.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 150...170

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 19.00...21.00
 Firing order : 12- 1- 5- 9- 8- 3-
 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-
 180-225-240-285-300-
 345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 650

Rack travel in mm : 13.90...14.10

Del.quantity cm³/ : 26.2...26.5

100 s: (25.9...26.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 375.0

Rack travel in mm : 5.1...5.4

Del.quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 650

Aneroid pressure h: 1100

Del.quantity : 262.0...265.0

1000 : (259.0...268.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing:

1st rack travel in: 12.90
Speed rpm : 1070...1080
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1400
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 72...80
Setting point w/out bumper spring
Speed rpm : 375
Rack travel in mm : 5.2

Testing:

Speed rpm : 100
Minimum rack trave: 8.00
Speed rpm : 375
Rack travel in mm : 5.10...5.40

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1030
Rack travel in m: 13.70...13.90
2nd speed rpm : 950
Rack travel in m: 14.20...14.40
3rd speed rpm : 850
Rack travel in m: 14.40...14.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 1050
Rack travel mm : 13.90...14.10

Measurement

Speed 1/min : 600

1st pressure hPa : 400
Rack travel in m: 9.30...9.50
2nd pressure hPa : 650
Rack travel in m: 12.10...12.30
3rd pressure hPa : 1370
Rack travel in m: 14.10...14.30
4th pressure hPa : -
Rack travel in m: 8.20...8.60

FUEL DELIVERY CHARACTERISTICS

1st version

H17

Aneroid pressure h: 1800
Speed rpm : 1030
Del.quantity cm3/ : 261.0...264.0
1000 s: (258.0...267.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1800
Speed rpm : 750
Del.quantity cm3/ : 279.0...282.0
1000 s: (276.0...285.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 130.0...132.0
1000 s: (127.0...135.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.90
Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 260.0...280.0
1000 s: (256.0...284.0)

Remarks:

On activation of the starting solenoid,
the start position must be reached.

Observe VDT-I-420/120

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 k1
 Edition : 12.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 676 808
 Injection pump
 Pump designation : PE6P120A72ORS7126
 EP type number : 0 412 626 815
 Governor
 Governor design. : RSV350...1050P1A543
 Governer no. : 0 421 833 310

Customer-spec. information
 Customer : SAAB-SCANIA

Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.10...14.20

Del.quantity cm³/ : 23.4...23.6

100 s: (23.1...23.9)

Spread cm³ : 0.6

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 4.3...4.7

Del.quantity cm³/ : 1.5...1.9

100 s: (-)

Spread cm³ : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 234.0...236.0

1000 : (231.0...239.0)

Spread cm³ : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 13.10

Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1165...1195

4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 3.9

Testing:

Speed rpm : 100
Minimum rack trave: 19.50
Speed rpm : 350
Rack travel in mm : 4.30...4.50
Rack travel in mm : 2.00
Speed rpm : 430...490

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1000
Del.quantity cm3/ : 223.0...231.0
1000 s: (221.0...233.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.10
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.30...4.50

Remarks:

:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 11,1 k
 Edition : 12.01.90
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 676 809

 Injection pump
 Pump designation : PE6P120A720RS7126
 EP type number : 0 412 626 815
 Governor
 Governor design. : RSV350...1050P1A543-
 1
 Governor no. : 0 421 833 325

 Customer-spec. information
 Customer : SCANIA

 Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve
 : 1 417 413 025

 Inlet press., bar : 1.50

 Test nozzle holder
 assembly : 1 688 901 019

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,8

 Test lines : 1 680 750 015

 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

 Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

 Rack travel in mm : 14.10...14.20

 Del.quantity cm³/ : 23.4...23.6
 100 s: (23.1...23.9)

 Spread cm³ : 0.6
 100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.3...4.7
 Del.quantity cm³/ : 1.5...1.9
 100 s: (-)
 Spread cm³ : 0.3
 100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -3
 Speed rpm : 800
 Rack travel in mm : 0.30...0.70

Governor spring pre-tension
 Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Aneroid pressure h: 900
 Del.quantity : 234.0...236.0
 1000 : (231.0...239.0)
 Spread cm³ : 6.00
 1000 : (9.00)

RATED SPEED

1st version
 Control lever
 position degrees: 108...116

Testing:
 1st rack travel in: 13.10
 Speed rpm : 1090...1100

2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1300
Speed rpm : 0.30...1.40

LOW IDLE 1
Control lever
position degrees: 74...82
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 3.9

Testing:
Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 4.30...4.50
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 10.50...10.90
2nd pressure hPa : 510
Rack travel in m: 13.00...13.10
3rd pressure hPa : 250
Rack travel in m: 11.40...11.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 1000
Del.quantity cm³/ : 223.0...231.0
1000 s: (221.0...233.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...154.0
1000 s: (148.0...156.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.10

H21

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on November 14, 1989

Start of delivery - engine: 16° before
TDC

Firing sequence of engine:
1-5-3-6-2-4.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SCA 14,0 i1
Edition : 12.02.90
Replaces : -
Test oil : ISO-4113

Combination no. : 0 402 678 813

Injection pump
Pump designation : PE8P120A920/4LS7125
EP type number : 0 412 628 833
Governor
Governor design. : RSV35D...1050P1A512-
2
Governor no. : 0 421 833 324

Customer-spec. information
Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
x Wall thickness
x Length mm : 6.00x1.50x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
: (4.95...5.15)

Rack travel in mm : 9.00...12.00
Firing order : 1- 2- 7- 3- 4- 5-
6- 8

Phasing : 0-45-90-135-180-225-
270-315
Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.50...13.60

Del.quantity cm³/ : 21.4...21.6
100 s : (21.1...21.9)

Spread cm³ : 0.6
100 s : (0.9)

2nd speed rpm : 350.0
Rack travel in mm : 4.6...5.0
Del.quantity cm³/ : 1.5...1.9
100 s : (-)
Spread cm³ : 0.3
100 s : (0.6)

GUIDE SLEEVE POSITION

Control-lever position
Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...0.70

Governor spring pre-tension
Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 700
Aneroid pressure h: 900
Del.quantity : 214.0...216.0
1000 : (211.0...219.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 94...102

Testing:
1st rack travel in: 12.50

Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1250
Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever
position degrees: 64...72
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 4.2

Testing:

Speed rpm : 100
Minimum rack travel: 19.50
Speed rpm : 350
Rack travel in mm : 4.60...4.80
Rack travel in mm : 2.00
Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 13.50...13.60

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.60
2nd pressure hPa : 365
Rack travel in m: 12.80...12.90
3rd pressure hPa : 215
Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 950
Del.quantity cm³/ : 203.0...211.0
1000 s: (201.0...213.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 158.0...162.0
1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 240.0...290.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO
diaphragm.

For comb. with letter index see
VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania
on 1990-01-11

Start of delivery - engine: 16° before
TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 c
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 735 800
 Injection pump
 Pump designation : PES5P120A720/3LS7210
 EP type number : 0 412 725 808
 Governor
 Governor design. : RQV325...1000PA962K
 Governor no. : 0 412 725 808

Customer-spec. information
 Customer : MAN

Engine : D2865LF03

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.10...13.20

Del. quantity cm³/ : 25.7...25.9

100 s: (25.4...26.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 7.70...7.90

2nd speed rpm : 325
 travel mm : 2.10...2.30

3rd speed rpm : 500
 travel mm : 4.10...4.50

4th speed rpm : 900
 travel mm : 6.40...6.80

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 257.0...259.0
1000 : (254.0...262.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 283...291

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1140...1170
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever position degrees: 240...248

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.10...13.20
2nd speed rpm : 1000
Rack travel in m: 12.60...12.80
3rd speed rpm : 650
Rack travel in m: 12.40...12.60
4th speed rpm : 400
Rack travel in m: 11.50...11.80

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 900

1st pressure hPa : -

Rack travel in m: 8.60...8.80
2nd pressure hPa : 170
Rack travel in m: 10.00...10.10
3rd pressure hPa : 600
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm3/ : 238.0...242.0
1000 s: (235.0...245.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm3/ : 259.0...265.0
1000 s: (256.0...268.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm3/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7048

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 10,0 c1
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 735 801
 Injection pump
 Pump designation : PES5P120A720/3LS7210
 EP type number : 0 412 725 808
 Governor
 Governor design. : RQV325...1000PA960K
 Governor no. : 0 412 725 808

Customer-spec. information
 Customer : MAN

Engine : D2865LF03

1st version kW : 235.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.10...13.20

Del. quantity cm³/ : 25.7...25.9

100 s: (25.4...26.2)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 5.9...6.1

Del. quantity cm³/ : 4.7...5.3

100 s: (4.4...5.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 9.40...9.60

2nd speed rpm : 325

travel mm : 1.30...1.50

3rd speed rpm : 500

travel mm : 3.20...3.80

4th speed rpm : 900

travel mm : 7.60...8.00

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1110

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 257.0...259.0
1000 : (254.0...262.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 293...301

Testing:

1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 249...257

Testing:

Speed rpm : 100
Minimum rack travel: 7.50
Speed rpm : 300
Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 340...450

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.10...13.20
2nd speed rpm : 1000
Rack travel in m: 12.60...12.80
3rd speed rpm : 650
Rack travel in m: 12.40...12.60
4th speed rpm : 400
Rack travel in m: 11.60...11.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.10...13.20

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.60...8.80
2nd pressure hPa : 170
Rack travel in m: 10.00...10.10
3rd pressure hPa : 600
Rack travel in m: 11.30...11.50

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 238.0...242.0
1000 s: (235.0...245.0)
Aneroid pressure h: 1200
Speed rpm : 650
Del.quantity cm³/ : 259.0...265.0
1000 s: (256.0...268.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 154.0...156.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 180.0...200.0
1000 s: (176.0...204.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.90...6.10
Del.quantity cm³/ : 47.0...53.0
1000 s: (44.0...56.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7049

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 5,9 w
 Edition : 08.06.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 736 806

Injection pump
 Pump designation : PES6P110A120RS7213
 EP type number : 0 412 716 804
 Governor
 Governor design. : RQV400...1250PA964-K
 Governor no. : 0 421 815 252

Customer-spec. information
 Customer : C.D.C.

Engine : 6BTA-A

1st version kW : 171.5
 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 90...100

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 15.50...15.60

Del.quantity cm³/ : 16.5...16.7

100 s: (16.3...16.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 400.0

Rack travel in mm : 5.4...5.6

Del.quantity cm³/ : 3.3...3.7

100 s: (3.1...3.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 0.70...1.10

2nd speed rpm : 400
 travel mm : 1.40...1.60

3rd speed rpm : 600
 travel mm : 3.00...3.20

4th speed rpm : 1300
 travel mm : 7.20...7.40

5th speed rpm : 1500
 travel mm : 9.20...9.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Aneroid pressure h: 1200

Del.quantity : 165.5...167.5

1000 : (163.5...169.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 14.50
Speed rpm : 1295...1305
2nd rack travel in: 4.00
Speed rpm : 1475...1505
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : 1.70
Torque control curve - 1st version
1st speed rpm : 1250
Rack travel in m: 15.50...15.60
2nd speed rpm : 800
Rack travel in m: 14.40...14.60
3rd speed rpm : 700
Rack travel in m: 13.80...14.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 7.60...8.00
2nd pressure hPa : 400
Rack travel in m: 9.70...9.80
3rd pressure hPa : 800
Rack travel in m: 13.40...13.80

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del.quantity cm³/ : 177.0...181.0
1000 s: (175.0...183.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 82.5...86.5
1000 s: (80.5...88.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.50
Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 155.0...175.0
1000 s: (150.0...180.0)
Rack travel in mm : 12.00...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del.quantity cm³/ : 33.0...37.0
1000 s: (31.0...39.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: C.D.C. # 3913440
Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r
 Edition : 08.06.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 807
 Injection pump
 Pump designation : PES6P110A12ORS7214
 EP type number : 0 412 716 805
 Governor
 Governor design. : RQV350...1100PA964-1
 K
 Governor no. : 0 421 815 253

Customer-spec. information
 Customer : C.D.C.

Engine : 6CTA-A
 1st version kW : 201.0

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Overflow
 quantity min. 1/h: 90...100
 Test nozzle holder
 assembly : 1 688 901 101
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,6
 Test lines : 1 680 750 008
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24
 Prestroke mm : 4.35...4.45
 : (4.30...4.50)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4
 Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250
 Rack travel in mm : 15.50...15.60
 Del.quantity cm³/ : 16.5...16.7
 100 s: (16.3...16.9)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 400.0
 Rack travel in mm : 5.4...5.6
 Del.quantity cm³/ : 3.3...3.7
 100 s: (3.1...3.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 1.80...2.00
 2nd speed rpm : 450
 travel mm : 3.20...3.40
 3rd speed rpm : 600
 travel mm : 5.20...5.40
 4th speed rpm : 1000
 travel mm : 8.10...8.30
 5th speed rpm : 1200
 travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1250
 Aneroid pressure h: 1200
 Del.quantity : 165.5...167.5
 1000 : (163.5...169.5)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 14.50
Speed rpm : 1145...1155
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 11...19

Testing:
Speed rpm : 275
Minimum rack travel: 7.20
Speed rpm : 400
Rack travel in mm : 5.40...5.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 15.50...15.60
2nd speed rpm : 800
Rack travel in m: 14.40...14.60
3rd speed rpm : 700
Rack travel in m: 13.80...14.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 1250
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement
Speed 1/min : 1250

1st pressure hPa : -
Rack travel in m: 7.60...8.00
2nd pressure hPa : 400
Rack travel in m: 9.70...9.80
3rd pressure hPa : 800
Rack travel in m: 13.40...13.80

START CUT-OUT

Speed 1/min : 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 800
Del. quantity cm³/ : 177.0...181.0
1000 s: (175.0...183.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 82.5...86.5
1000 s: (80.5...88.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.50
Speed rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 155.0...175.0
1000 s: (150.0...180.0)
Rack travel in mm : 12.40...13.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.40...5.60
Del. quantity cm³/ : 33.0...37.0
1000 s: (31.0...39.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: C.D.C. # 3916627
Start-of-delivery mark 6° cam angle
after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 t
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113

 Combination no. : 0 402 736 808

 Injection pump
 Pump designation : PES6P120A72Q/3LS7209
 EP type number : 0 412 726 837
 Governor
 Governor design. : RQV300...1000PA962-1
 K
 Governor no. : 0 421 815 248

Customer-spec. information

Customer : MAN

 Engine : D2866LF06

1st version kW : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 1 417 413 025

 Inlet press., bar : 1.50

 Test nozzle holder
 assembly : 1 688 901 105

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 29.3...29.5

100 s: (29.0...29.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

travel mm : 8.40...8.60

2nd speed rpm : 300

travel mm : 2.10...2.30

3rd speed rpm : 500

travel mm : 4.10...4.50

4th speed rpm : 900

travel mm : 6.50...6.90

5th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1140

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 293.0...295.0
1000 : (290.0...298.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 284...292

Testing:

1st rack travel in: 12.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1125...1155
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 240...248

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 320...440

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.70...13.80
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 13.30...13.50
4th speed rpm : 400

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 220
Rack travel in m: 9.10...9.20
3rd pressure hPa : 720
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 267.0...271.0
1000 s: (264.0...274.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 282.0...288.0
1000 s: (279.0...291.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 2-7987

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 t1
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 736 809
 Injection pump
 Pump designation : PES6P120A720/3LS7209
 EP type number : 0 412 726 837
 Governor
 Governor design. : RQV300...1000PA960-2
 K
 Governor no. : 0 421 815 249

Customer-spec. information
 Customer : MAN

Engine : D2866LF06

1st version kW : 309.0
 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
 : (4.75...4.95)
 Rack travel in mm : 15.00...16.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60
 & maximum rack tra: 15.0...16.0
 Difference ° CS : 1.75...3.25

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.70...13.80

Del.quantity cm³/ : 29.3...29.5

100 s: (29.0...29.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.8...5.2

Del.quantity cm³/ : 2.0...2.6

100 s: (1.7...2.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045
 travel mm : 9.60...9.80

2nd speed rpm : 300
 travel mm : 1.50...1.70

3rd speed rpm : 500
 travel mm : 3.50...4.10

4th speed rpm : 900
 travel mm : 7.70...8.10

5th speed rpm : 1350
 travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900
Aneroid pressure h: 1200
Del.quantity : 293.0...295.0
1000 : (290.0...298.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 293...301

Testing:

1st rack travel in: 12.10
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1130...1160
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 247...255

Testing:

Speed rpm : 100
Minimum rack travel: 6.50
Speed rpm : 300
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 300...420

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.70...13.80
2nd speed rpm : 1000
Rack travel in m: 13.00...13.20
3rd speed rpm : 750
Rack travel in m: 13.30...13.50
4th speed rpm : 400
Rack travel in m: 10.70...11.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.70...13.80

Measurement

Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.70...8.90
2nd pressure hPa : 220
Rack travel in m: 9.10...9.20
3rd pressure hPa : 720
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1000
Del.quantity cm³/ : 267.0...271.0
1000 s: (264.0...274.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 282.0...288.0
1000 s: (279.0...291.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 166.0...168.0
1000 s: (163.0...171.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 210.0...230.0
1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 4.80...5.20
Del.quantity cm³/ : 20.0...26.0
1000 s: (17.0...29.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MAN-NR. 3-7052

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 r
 Edition : 19.06.90
 Replaces : 2.10.89
 Test oil : ISO-4113

Combination no. : 0 402 745 807

Injection pump
 Pump designation : PES5P120A720LS7174
 EP type number : 0 412 725 806
 Governor
 Governor design. : RQ300/1050PA774-2
 Governor no. : 0 421 801 450

Customer-spec. information
 Customer : DAIMLER-BENZ

Engine : OM449 A

1st version kW : 184.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del. quantity cm³/ : 19.6...19.8

100 s: (19.3...20.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.4...7.0

Del. quantity cm³/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm³ : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 650

Del. quantity : 196.0...198.0

1000 : (193.0...201.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0

Testing:
1st rack travel in: 13.40
Speed rpm : 1095...1110
2nd rack travel in: 4.00
Speed rpm : 1160...1190
4th rack travel in: 1300
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 6.7

Testing:

Speed rpm : 200
Minimum rack travel: 8.70
Speed rpm : 300
Rack travel in mm : 6.40...7.00
Rack travel in mm : 2.00
Speed rpm : 370...410

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 14.40...14.60
2nd speed rpm : 750
Rack travel in m: 14.90...15.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 14.10...14.30

Measurement

Speed 1/min : 600
1st pressure hPa : 250
Rack travel in m: 12.20...12.40
2nd pressure hPa : 400
Rack travel in m: 13.50...13.70
3rd pressure hPa : 750
Rack travel in m: 14.20...14.30 *
4th pressure hPa : 850
Rack travel in m: 14.60...14.80
5th pressure hPa : -
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm³/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm³/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40
Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 10,0 m 3
 Edition : 17.05.90
 Replaces : 2.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 745 809
 Injection pump
 Pump designation : PES5P120A720LS7160
 EP type number : 0 412 725 802
 Governor
 Governor design. : RQV300..1050PA940
 Governor no. : 0 421 813 824

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM449 A

1st version kw : 184.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 20.00...21.00
 Firing order : 1- 3- 5- 4- 2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm : 600

 Rack travel in mm : 14.10...14.30

 Del.quantity cm³/ : 19.6...19.8
 100 s: (19.3...20.1)

 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 300.0
 Rack travel in mm : 6.5...7.1
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 1.10...1.30
 2nd speed rpm : 600
 travel mm : 4.90...5.10
 3rd speed rpm : 800
 travel mm : 5.80...6.10
 4th speed rpm : 1100
 travel mm : 8.20...8.60
 5th speed rpm : 1175
 travel mm : 9.50...10.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1130
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 650
Del.quantity : 196.0...198.0
1000 : (193.0...201.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 13.60
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 80...88

Testing:
Speed rpm : 200
Minimum rack travel: 8.80
Speed rpm : 300
Rack travel in mm : 6.50...7.10

CONSTANT REGULATION

Speed rpm : 300...400

TORQUE CONTROL

Dimension a mm : 0.40
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 14.50...14.70
2nd speed rpm : 750
Rack travel in m: 14.90...15.10
3rd speed rpm : 900
Rack travel in m: 14.70...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 650
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 600

1st pressure hPa : 250
Rack travel in m: 11.20...11.40

2nd pressure hPa : 400
Rack travel in m: 12.50...12.70
3rd pressure hPa : 750
Rack travel in m: 13.20...13.30 *
4th pressure hPa : 850
Rack travel in m: 13.60...13.80
5th pressure hPa : -
Rack travel in m: 11.90...12.20

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del.quantity cm3/ : 208.0...211.0
1000 s: (205.0...214.0)
Spread cm3 : 8.00
1000 s: (12.)
Aneroid pressure h: 1200
Speed rpm : 750
Del.quantity cm3/ : 216.0...220.0
1000 s: (213.0...223.0)
Spread cm3 : 8.00
1000 s: (12.00)
Speed rpm : 500
Del.quantity cm3/ : 150.0...152.0
1000 s: (147.0...155.0)
Spread cm3 : 8.00
1000 s: (12.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.60
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 220.0...240.0
1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 a
Edition : 12.04.90
Replaces : 1.9.87
Test oil : ISO-4113
Combination no. : 0 402 746 807
Injection pump
Pump designation : PES6P120A72ORS7121
EP type number : 0 412 726 804
Governor
Governor design. : RQV250...950PA793-1
Governor no. : 0 421 813 591

Customer-spec. information
Customer : PERKINS

Engine : EAGLE LE

1st version kW : 300.0
Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
x Wall thickness
x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 9.00...12.00
Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 250.0

Rack travel in mm : 4.8...5.0

Del.quantity cm3/ : 1.3...1.7

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.20

2nd speed rpm : 300

travel mm : 1.70...2.00

3rd speed rpm : 500

travel mm : 3.00...3.30

4th speed rpm : 1000

travel mm : 8.20...8.40

5th speed rpm : 1070

travel mm : 9.30...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1010

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 209.0...211.0
1000 : (206.0...214.0)
Spread cm³ : 6.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 116...124

Testing:
1st rack travel in: 11.60
Speed rpm : 990...1000
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 77...85

Testing:
Speed rpm : 100
Minimum rack travel: 6.30
Speed rpm : 250
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 250...350

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.10...11.20
2nd pressure hPa : 510
Rack travel in m: 12.20...12.30
3rd pressure hPa : 350
Rack travel in m: 11.40...11.60

START CUT-OUT

Speed 1/min : 170 (190)

FUEL DELIVERY CHARACTERISTICS

1st version

J13

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 160.0...164.0
1000 s: (158.0...166.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.00
Del.quantity cm³/ : 13.0...17.0
Spread cm³ : 3.00
1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a
 Edition : 02.05.90
 Replaces : 30.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 810

Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848K
 Governor no. : 0 421 815 168

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 23.6...23.8
 100 s: (23.3...24.1)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.0...4.2
 Del.quantity cm³/ : 3.2...3.8
 100 s: (3.0...4.0)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 3.10...3.30
 3rd speed rpm : 850
 travel mm : 5.90...6.10
 4th speed rpm : 1000
 travel mm : 7.50...7.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 900
 Del.quantity : 236.5...238.5
 1000 : (233.5...241.5)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 53...61

Testing:
1st rack travel in: 12.90
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.60
Speed rpm : 325
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 625
Rack travel in m: 14.10...14.20
3rd speed rpm : 800
Rack travel in m: 14.00...14.10
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 275
Rack travel in m: 10.00...10.10
3rd pressure hPa : 570
Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 625
Del.quantity cm3/ : 257.0...263.0
1000 s: (254.0...266.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 142.0...146.0
1000 s: (140.0...148.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 8.50...8.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.00...4.20
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5173P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a1
Edition : 02.05.90
Replaces : 31.10.89
Test oil : ISO-4113
Combination no. : 0 402 746 814
Injection pump
Pump designation : PES6P120A720RS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...850PA848-1K
Governor no. : 0 421 815 169

Customer-spec. information
Customer : MACK TRUCKS

Engine : E6 300 4VH

1st version kw : 224.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 20.0...20.2
100 s: (19.7...20.5)

Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.5...4.7
Del.quantity cm3/ : 3.2...3.8
100 s: (3.0...4.0)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.10
3rd speed rpm : 850
travel mm : 6.20...6.40
4th speed rpm : 1000
travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 900
Del.quantity : 200.5...202.5
1000 : (197.5...205.5)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 52...60

Testing:

1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.30...13.50
3rd speed rpm : 600
Rack travel in m: 13.50...13.70
4th speed rpm : 500
Rack travel in m: 0.00...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 250
Rack travel in m: 10.90...11.00
3rd pressure hPa : 475
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 217.0...223.0
1000 s: (214.0...226.0)
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 233.0...239.0
1000 s: (230.0...242.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a2
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 815
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA848-2K
 Governor no. : 0 421 815 170

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 275 4VH

1st version kW : 202.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del. quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del. quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.00
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.60...12.70
3rd speed rpm : 700
Rack travel in m: 12.50...12.70
4th speed rpm : 500
Rack travel in m: 0.00...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.50...9.90
2nd pressure hPa : 215
Rack travel in m: 10.30...10.40
3rd pressure hPa : 360
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 210.5...216.5
1000 s: (207.5...219.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 144.0...148.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 9.50...9.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5173P2

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a3
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 816

Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA848-3K
 Governor no. : 0 421 815 171

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM6-25DL 4VH

1st version kW : 186.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del. quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 52...60

Testing:

1st rack travel in: 9.80

Speed rpm : 925...935

2nd rack travel in: 4.00

Speed rpm : 1010...1040

4th rack travel in: 1100

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 9...17

Testing:

Speed rpm : 275

Minimum rack trave: 6.10

Speed rpm : 325

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.80...10.90

2nd speed rpm : 510

Rack travel in m: 13.00...13.20

3rd speed rpm : 700

Rack travel in m: 11.60...11.80

4th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510

Pressure hPa : 1200

Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40

3rd pressure hPa : 435

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

J21

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm3/ : 240.0...246.0

1000 s: (237.0...249.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm3/ : 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 165.0...205.0

1000 s: (155.0...215.0)

Rack travel in mm : 9.10...9.50

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.50...4.70

Del.quantity cm3/ : 39.0...45.0

1000 s: (37.0...47.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5173P18

Delivery-valve spring pre-tension

3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a4
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 817

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848-4K
 Governor no. : 0 421 815 173

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : EC6 350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.20...15.30

Del.quantity cm3/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 250.5...252.5

1000 : (247.5...255.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 56...64

Testing:

1st rack travel in: 14.20
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1090...1120
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.50
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.20...15.30
2nd speed rpm : 625
Rack travel in m: 15.50...15.60
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: 0.00...15.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 280
Rack travel in m: 10.70...10.80
3rd pressure hPa : 650
Rack travel in m: 13.60...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 278.0...284.0
1000 s: (275.0...287.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.20
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 120.0...160.0
1000 s: (110.0...170.0)
Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P14

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a5
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 818
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA848-5K
 Governor no. : 0 421 815 174

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : EM 6 275L 4VH

1st version kW : 202.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 19.0...19.2
 100 s : (18.7...19.5)

Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm³/ : 3.7...4.3
 100 s : (3.5...4.5)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.10
 3rd speed rpm : 850
 travel mm : 6.20...6.40
 4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 190.0...192.0
 1000 : (187.0...195.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.20
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 275
Minimum rack travel: 1.50
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.20...12.30
2nd speed rpm : 510
Rack travel in m: 14.10...14.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.40
4th speed rpm : 400
Rack travel in m: 0.00...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 280
Rack travel in m: 10.60...10.70
3rd pressure hPa : 485
Rack travel in m: 12.70...13.30

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 262.5...268.5
1000 s: (259.5...271.5)
Spread cm3 : 8.00
1000 s: (12.00)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 145.0...149.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 9.40...9.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 37.0...43.0
1000 s: (35.0...45.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5173-P22

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a6
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 819

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA848-6K
 Governor no. : 0 421 815 175

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM6-225L 4VH

1st version kw : 165.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del. quantity cm³/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm³/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del. quantity : 158.5...160.5

1000 : (155.5...163.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 10.00
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.00...11.10
2nd speed rpm : 510
Rack travel in m: 13.20...13.40
3rd speed rpm : 700
Rack travel in m: 11.80...12.00
4th speed rpm : 600
Rack travel in m: 12.50...12.70
5th speed rpm : 350
Rack travel in m: 0.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.20...13.40

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 220
Rack travel in m: 9.70...9.80
3rd pressure hPa : 500
Rack travel in m: 12.00...12.40

J27

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 234.0...240.0
1000 s: (231.0...243.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 131.0...135.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 925...935

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 8.50...8.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173P26

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b5
 Edition : 02.05.90
 Replaces : 7.10.88
 Test oil : ISO-4113

 Combination no. : 0 402 746 820

 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA878K
 Governor no. : 0 421 815 177

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E6 275 4VH

1st version kW : 202.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.00...12.10

Del.quantity cm³/ : 18.1...18.3

100 s: (17.8...18.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 181.0...183.0

1000 : (178.0...186.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 52...60

Testing:

1st rack travel in: 11.00
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.00...12.10
2nd speed rpm : 600
Rack travel in m: 12.60...12.70
3rd speed rpm : 700
Rack travel in m: 12.50...12.70
4th speed rpm : 500
Rack travel in m: 0.00...12.40

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 12.60...12.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.50...9.90
2nd pressure hPa : 215
Rack travel in m: 10.30...10.40
3rd pressure hPa : 360
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

K01

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 210.5...216.5
1000 s: (207.5...219.5)
Spread cm3 : 8.00
1000 s: (12.00)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 144.0...148.0
1000 s: (142.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 900...910

INTERMEDIATE RATED SPEED

Rack travel in mm : 11.30
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 9.50...9.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P4

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b
Edition : 02.05.90
Replaces : 8.4.88
Test oil : ISO-4113
Combination no. : 0 402 746 821
Injection pump
Pump designation : PES6P120A72ORS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...850PA878-1K
Governor no. : 0 421 815 178

Customer-spec. information
Customer : MACK TRUCKS INC.

Engine : E6 300 4VH

1st version kW : 224.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/ : 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del.quantity : 200.5...202.5

1000 : (197.5...205.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:

1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.30...13.50
3rd speed rpm : 600
Rack travel in m: 13.50...13.70
4th speed rpm : 500
Rack travel in m: 0.00...13.10

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.50...13.70

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 250
Rack travel in m: 10.90...11.00
3rd pressure hPa : 475
Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

K03

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm³/ : 217.0...223.0
1000 s: (214.0...226.0)

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 233.0...239.0
1000 s: (230.0...242.0)

Spread cm³ : 8.00
1000 s: (12.0)

Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 900...910

INTERMEDIATE RATED SPEED

Rack travel in mm : 12.00
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300.0

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 3136C5173-P8

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b1
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 822
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA878-2K
 Governor no. : 0 421 815 179

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E6 350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.90...14.00

Del.quantity cm³/ : 23.6...23.8

100 s: (23.3...24.1)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.0...4.2

Del.quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 236.5...238.5

1000 : (233.5...241.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 55...63

Testing:

1st rack travel in: 12.90
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 5.60
Speed rpm : 325
Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.90...14.00
2nd speed rpm : 625
Rack travel in m: 14.10...14.20
3rd speed rpm : 800
Rack travel in m: 14.00...14.10
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 900
Rack travel mm : 14.10...14.20

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 275
Rack travel in m: 10.00...10.10
3rd pressure hPa : 570
Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

K05

1st version

Aneroid pressure h: 900
Speed rpm : 625
Del.quantity cm³/ : 257.0...263.0
1000 s: (254.0...266.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 136.0...140.0
1000 s: (134.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.90
Speed rpm : 950...960

INTERMEDIATE RATED SPEED

Rack travel in mm : 13.00
Speed rpm : 805
Rack travel in mm : 4.10
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...180.0
1000 s: (130.0...190.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.00...4.20
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P12

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b2
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 823
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA878-3K
 Governor no. : 0 421 815 180

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : EM6 275L 4VH

1st version kW : 202.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 19.0...19.2

100 s: (18.7...19.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del. quantity cm³/ : 3.7...4.3

100 s: (3.5...4.5)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del. quantity : 190.0...192.0

1000 : (187.0...195.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 52...60

Testing:
1st rack travel in: 11.20
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 9...17

Testing:
Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.20...12.30
2nd speed rpm : 510
Rack travel in m: 14.10...14.30
3rd speed rpm : 700
Rack travel in m: 13.20...13.40
4th speed rpm : 400
Rack travel in m: 0.00...13.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 9.40...9.60
2nd pressure hPa : 280
Rack travel in m: 10.60...10.70
3rd pressure hPa : 485
Rack travel in m: 12.70...13.30

FUEL DELIVERY CHARACTERISTICS

K07

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 262.5...268.5
1000 s: (259.5...271.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 145.0...149.0
1000 s: (143.0...151.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 925...935

INTERMEDIATE RATED SPEED
Rack travel in mm : 10.30
Speed rpm : 805.0
Rack travel in mm : 4.70
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 9.40...9.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm3/ : 37.0...43.0
1000 s: (35.0...45.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5173-P24

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b3
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 824

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA878-4K
 Governor no. : 0 421 815 181

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : EM6 225L 4VH

1st version kW : 165.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 15.8...16.0

100 s: (15.5...16.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.6...4.8

Del.quantity cm³/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 900

Del.quantity : 158.5...160.5

1000 : (155.5...163.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 52...60

Testing:

1st rack travel in: 10.00
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1015...1045
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17

Testing:

Speed rpm : 275
Minimum rack travel: 1.50
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.00...11.10
2nd speed rpm : 510
Rack travel in m: 13.20...13.40
3rd speed rpm : 600
Rack travel in m: 12.50...12.70
4th speed rpm : 700
Rack travel in m: 11.80...12.00
5th speed rpm : 350
Rack travel in m: 0.00...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 13.20...13.40

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 220
Rack travel in m: 9.70...9.80
3rd pressure hPa : 500
Rack travel in m: 12.00...12.40

K09

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm³/ : 234.0...240.0
1000 s: (231.0...243.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 131.0...135.0
1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.00
Speed rpm : 925...935

INTERMEDIATE RATED SPEED

Rack travel in mm : 10.20
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 8.50...8.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P28

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b6
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 825

Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA878-5K
 Governor no. : 0 421 815 182

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E C 6 350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.00...15.10

Del. quantity cm³/ : 25.0...25.2

100 s: (24.7...25.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 3.10...3.30

3rd speed rpm : 850

travel mm : 5.90...6.10

4th speed rpm : 1000

travel mm : 7.50...7.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1130

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200
Del.quantity : 250.5...252.5
1000 : (247.5...255.5)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:

1st rack travel in: 14.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.60
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.00...15.10
2nd speed rpm : 625
Rack travel in m: 15.40...15.50
3rd speed rpm : 700
Rack travel in m: 15.30...15.40
4th speed rpm : 500
Rack travel in m: 0.00...15.00

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.40...15.50

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70

2nd pressure hPa : 280
Rack travel in m: 10.40...10.50
3rd pressure hPa : 650
Rack travel in m: 13.30...13.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 272.5...278.5
1000 s: (269.5...281.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.00
Speed rpm : 950...960

INTERMEDIATE RATED SPEED

Rack travel in mm : 13.70
Speed rpm : 850
Rack travel in mm : 5.00
Speed rpm : 350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (120.0...180.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P16

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 b4
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 826

Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA878-6K
 Governor no. : 0 421 815 183

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : EM6 250L 4VH

1st version kW : 186.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.80...10.90

Del. quantity cm³/ : 16.3...16.5

100 s: (16.0...16.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm : 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del. quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 52...60

Testing:

1st rack travel in: 9.80
Speed rpm : 925...935
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 9...17

Testing:

Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 10.80...10.90
2nd speed rpm : 510
Rack travel in m: 13.00...13.20
3rd speed rpm : 700
Rack travel in m: 11.60...11.80
4th speed rpm : 550
Rack travel in m: 0.00...13.10

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.00...13.20

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 215
Rack travel in m: 10.30...10.40
3rd pressure hPa : 435
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 240.0...246.0
1000 s: (237.0...249.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 146.0...150.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 9.80
Speed rpm : 925...935

INTERMEDIATE RATED SPEED

Rack travel in mm : 10.20
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 145.0...185.0
1000 s: (135.0...195.0)
Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P20

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 d
Edition : 02.05.90
Replaces : 31.10.89
Test oil : ISO-4113
Combination no. : 0 402 746 828
Injection pump
Pump designation : PES6P120A720RS7148
EP type number : 0 412 726 810
Governor
Governor design. : RQV325...875PA878-7K
Governor no. : 0 421 815 184

Customer-spec. information
Customer : MACK TRUCKS INC.

Engine : EM6 300L 4VH

1st version kw : 224.0
Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
quantity min. 1/h: 160...170

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 6.00...8.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.10...11.20

Del.quantity cm3/ : 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40

2nd speed rpm : 450
travel mm : 2.50...2.80

3rd speed rpm : 600
travel mm : 4.10...4.30

4th speed rpm : 875
travel mm : 7.30...7.50

5th speed rpm : 1000
travel mm : 8.70...9.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1500

Del.quantity : 199.0...201.0

1000 : (196.0...204.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 10.10
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.10...11.20
2nd speed rpm : 510
Rack travel in m: 16.50...16.70
3rd speed rpm : 700
Rack travel in m: 13.30...13.50
4th speed rpm : 600
Rack travel in m: 15.50...15.70
5th speed rpm : 450
Rack travel in m: 0.00...16.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1500
Rack travel mm : 16.50...16.70

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 370

Rack travel in m: 10.70...10.80
3rd pressure hPa : 710
Rack travel in m: 14.40...14.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 510
Del.quantity cm³/ : 299.0...305.0
1000 s: (296.0...308.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 152.5...156.5
1000 s: (150.5...158.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.10
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 11.30
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 140.0...160.0
1000 s: (135.0...165.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5174-P4
Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 a7
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 829
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...1050PA848-8
 K
 Governor no. : 0 421 815 185

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6-270 4VH

1st version kw : 201.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.20...12.30

Del. quantity cm³/ : 17.4...17.6

100 s: (17.1...17.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 3.8...4.4

100 s: (3.6...4.6)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.40...1.60

2nd speed rpm : 450
 travel mm : 2.50...2.80

3rd speed rpm : 800
 travel mm : 4.80...5.00

4th speed rpm : 1050
 travel mm : 7.30...7.60

5th speed rpm : 1200
 travel mm : 9.40...9.60

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1210

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 1050
Aneroid pressure h: 900
Del.quantity : 174.0...176.0
1000 : (171.0...179.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control Lever
position degrees: 55...63

Testing:
1st rack travel in: 11.20
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1170...1200
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 6.40
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 325...600

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 1050
Rack travel in m: 12.20...12.30
2nd speed rpm : 630
Rack travel in m: 12.00...12.20
3rd speed rpm : 925
Rack travel in m: 11.90...12.10
4th speed rpm : 800
Rack travel in m: 12.20...12.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 630
Pressure hPa : 900
Rack travel mm : 12.00...12.10

Measurement
Speed 1/min : 630

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 270
Rack travel in m: 9.60...9.70
3rd pressure hPa : 400
Rack travel in m: 11.00...11.50

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 630
Del.quantity cm³/ : 192.0...198.0
1000 s: (189.0...201.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 129.0...133.0
1000 s: (127.0...135.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 38.0...44.0
1000 s: (36.0...46.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MACK # 3136C5173P30

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a
 Edition : 02.05.90
 Replaces : 30.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 836

Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA848-12
 K

Governer no. : 0 421 815 192

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E7 400 4VH

1st version kW : 298.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

 Rack travel in mm : 15.50...15.60

 Del.quantity cm³/ : 27.2...27.4
 100 s: (26.9...27.7)

 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm³/ : 4.3...4.9
 100 s: (4.1...5.1)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.30...1.60
 2nd speed rpm : 500
 travel mm : 3.40...4.00
 3rd speed rpm : 900
 travel mm : 6.70...6.90
 4th speed rpm : 1075
 travel mm : 8.40...8.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200
 Del.quantity : 272.0...274.0
 1000 : (269.0...277.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 14.50
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 1.50
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 325...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.50...15.60
2nd speed rpm : 625
Rack travel in m: 15.30...15.50
3rd speed rpm : 500
Rack travel in m: 0.00...14.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 15.50...15.60

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.20...8.60
2nd pressure hPa : 225
Rack travel in m: 9.40...9.50
3rd pressure hPa : 770
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 280 (290)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 309.0...315.0
1000 s: (306.0...318.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 166.0...170.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 14.50
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 43.0...49.0
1000 s: (41.0...51.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5179-P18

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a1
 Edition : 02.05.90
 Replaces : 30.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 837

Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA848-15
 K
 Governor no. : 0 421 815 193

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E7 350 4VH

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

K20

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.00...14.10

Del.quantity cm³/ : 22.8...23.0
 100 s: (22.5...23.3)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 5.3...5.5
 Del.quantity cm³/ : 4.1...4.7
 100 s: (3.9...4.9)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.30...1.60
 2nd speed rpm : 500
 travel mm : 3.40...4.00
 3rd speed rpm : 900
 travel mm : 6.70...6.90
 4th speed rpm : 1075
 travel mm : 8.40...8.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 900
 Del.quantity : 228.0...230.0
 1000 : (225.0...233.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 13.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1100...1130
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 6.90
Speed rpm : 325
Rack travel in mm : 5.30...5.50

CONSTANT REGULATION
Speed rpm : 325...500

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.00...14.10
2nd speed rpm : 625
Rack travel in m: 13.80...14.00
3rd speed rpm : 500
Rack travel in m: 0.00...13.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 900
Rack travel mm : 14.00...14.10

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.80...9.20
2nd pressure hPa : 225
Rack travel in m: 10.20...10.30
3rd pressure hPa : 545
Rack travel in m: 12.70...13.10

START CUT-OUT

Speed 1/min : 265 (275)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 625
Del.quantity cm³/ : 260.0...266.0
1000 s: (257.0...269.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 166.0...170.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.00
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.40...10.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.30...5.50
Del.quantity cm³/ : 41.0...47.0
1000 s: (39.0...49.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P2

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a7
 Edition : 02.05.90
 Replaces : 30.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 838

Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA848-14
 K
 Governor no. : 0 421 815 194

Customer-spec. information
 Customer : MACK

Engine : EM7-250L 4VH

1st version kW : 187.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

K22

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 17.4...17.6
 100 s: (17.1...17.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.30...1.60

2nd speed rpm : 500
 travel mm : 3.40...4.00

3rd speed rpm : 900
 travel mm : 6.70...6.90

4th speed rpm : 1075
 travel mm : 8.40...8.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 900
 Del.quantity : 174.0...176.0
 1000 : (171.0...179.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 9.40
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 10.40...10.50
2nd speed rpm : 510
Rack travel in m: 11.90...12.10
3rd speed rpm : 450
Rack travel in m: 0.00...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 11.90...12.10

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 7.80...8.20
2nd pressure hPa : 235
Rack travel in m: 8.80...8.90
3rd pressure hPa : 485
Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm3/ : 244.0...250.0
1000 s: (241.0...253.0)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 400
Del.quantity cm3/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5179-P26

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 b
 Edition : 02.05.90
 Replaces : 30.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 839

Injection pump
 Pump designation : PES6P120A72ORS7148
 EP type number : 0 412 726 810
 Governor
 Governor design. : RQV325...875PA848-19
 K
 Governor no. : 0 421 815 199

Customer-spec. information
 Customer : MACK

Engine : EM7 300L 4VH

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 6.00...8.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.50...11.60

Del.quantity cm³/ : 21.0...21.2
 100 s: (20.7...21.5)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.5...4.7
 Del.quantity cm³/ : 4.1...4.7
 100 s: (3.9...4.9)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.50...2.80

3rd speed rpm : 600
 travel mm : 4.10...4.30

4th speed rpm : 875
 travel mm : 7.30...7.50

5th speed rpm : 1000
 travel mm : 8.70...9.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 210.0...212.0
 1000 : (207.0...215.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 10.50
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 8...16

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.50...11.60
2nd speed rpm : 510
Rack travel in m: 16.00...16.20
3rd speed rpm : 800
Rack travel in m: 12.00...12.20
4th speed rpm : 600
Rack travel in m: 15.10...15.30
5th speed rpm : 450
Rack travel in m: 0.00...15.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 16.00...16.20

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 325

K25

Rack travel in m: 10.60...10.70
3rd pressure hPa : 815
Rack travel in m: 14.30...14.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 294.0...300.0
1000 s: (291.0...303.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 166.0...170.0
1000 s: (164.0...172.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.50
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...185.0
1000 s: (155.0...195.0)
Rack travel in mm : 8.70...9.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 41.0...47.0
1000 s: (39.0...49.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a12
 Edition : 02.05.90
 Replaces : 30.10.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 840
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...875PA848-18
 K
 Governor no. : 0 421 815 198

Customer-spec. information
 Customer : MACK

Engine : EMC6 250L 4VH

1st version kW : 187.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. l/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 17.3...17.5

100 s: (17.0...17.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del.quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40

2nd speed rpm : 450
travel mm : 2.80...3.20

3rd speed rpm : 850
travel mm : 6.20...6.40

4th speed rpm : 1000
travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 173.0...175.0

1000 : (170.0...178.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 54...62

Testing:

1st rack travel in: 10.20
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1010...1040
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever position degrees: 9...17

Testing:

Speed rpm : 275
Minimum rack travel: 1.50
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.20...11.30
2nd speed rpm : 510
Rack travel in m: 13.10...13.30
3rd speed rpm : 700
Rack travel in m: 12.00...12.20
4th speed rpm : 450
Rack travel in m: 0.00...13.10

Aneroid/Altitude Compensator Test

1st version

Setting -
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.10...13.30

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 9.10...9.50
2nd pressure hPa : 215
Rack travel in m: 10.30...10.40
3rd pressure hPa : 435
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 239.0...245.0
1000 s: (236.0...248.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 146.0...150.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 9.10...9.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P32

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e
 Edition : 24.01.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 842

Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-17
 K

Governer no. : 0 421 815 200

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EMC6 300L 4VH

1st version kW : 200.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

 Rack travel in mm : 14.90...15.00

 Del.quantity cm³/ : 22.5...22.7
 100 s: (22.3...22.9)

 Spread cm³ : 0.5

 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 3.00...3.40
 3rd speed rpm : 850
 travel mm : 5.90...6.10
 4th speed rpm : 1000
 travel mm : 7.40...7.70

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1120
 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200

Del.quantity : 225.0...227.0
1000 : (223.0...229.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 13.90
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1065...1095
4th rack travel in: 1160
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 14.90...15.00
2nd speed rpm : 510
Rack travel in m: 16.90...17.10
3rd speed rpm : 700
Rack travel in m: 15.70...15.90
4th speed rpm : 600
Rack travel in m: 16.60...16.80
5th speed rpm : 420
Rack travel in m: 0.00...16.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 16.90...17.10

Measurement
Speed 1/min : 510

1st pressure hPa : -

L01

Rack travel in m: 10.90...11.30
2nd pressure hPa : 375
Rack travel in m: 12.70...12.80
3rd pressure hPa : 735
Rack travel in m: 15.70...16.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 309.0...315.0
1000 s: (306.0...318.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 156.0...160.0
1000 s: (154.0...162.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.90
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 10.80...11.20

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5181P14

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a15
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

 Combination no. : 0 402 746 846

 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA848-23
 K
 Governor no. : 0 421 815 204

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 300 4VH

1st version kw : 224.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 20.0...20.2

100 s : (19.7...20.5)

Spread cm³ : 0.5

100 s : (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 3.2...3.8

100 s : (3.0...4.0)

Spread cm³ : 0.8

100 s : (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40

2nd speed rpm : 450
travel mm : 2.80...3.10

3rd speed rpm : 850
travel mm : 6.20...6.40

4th speed rpm : 1000
travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del. quantity : 200.0...202.0

1000 : (197.0...205.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:

1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 1.50
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 600
Rack travel in m: 13.80...13.90
4th speed rpm : 500
Rack travel in m: 0.00...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 250
Rack travel in m: 11.20...11.30
3rd pressure hPa : 475
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 237.0...243.0
1000 s: (234.0...246.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a16
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 847

Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA878-8K
 Governor no. : 0 421 815 205

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 300 4VH

1st version kW : 224.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.90...13.00

Del.quantity cm³/ : 20.0...20.2
 100 s: (19.7...20.5)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.5...4.7
 Del.quantity cm³/ : 3.2...3.8
 100 s: (3.0...4.0)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 900
 Del.quantity : 200.0...202.0
 1000 : (197.0...205.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 11.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.90...13.00
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 600
Rack travel in m: 13.80...13.90
4th speed rpm : 500
Rack travel in m: 0.00...13.60

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.80...13.90

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 250
Rack travel in m: 11.20...11.30
3rd pressure hPa : 475
Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

LOS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 237.0...243.0
1000 s: (234.0...246.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.90
Speed rpm : 900...910

INTERMEDIATE RATED SPEED

Rack travel in mm : 12.20
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P8

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a17
 Edition : 02.05.90
 Replaces : 31.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 848

Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA878-9K
 Governor no. : 0 421 815 206

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E6-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.80...14.90

Del.quantity cm³/ : 24.8...25.0
 100 s: (24.5...25.3)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.9...5.1
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 3.10...3.30
 3rd speed rpm : 850
 travel mm : 5.90...6.10
 4th speed rpm : 1000
 travel mm : 7.50...7.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200
 Del.quantity : 248.5...250.5
 1000 : (245.5...253.5)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 56...64

Testing:
1st rack travel in: 13.80
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack trave: 6.60
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.80...14.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.30
3rd speed rpm : 700
Rack travel in m: 15.00...15.10
4th speed rpm : 500
Rack travel in m: 0.00...14.90

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.20...15.30

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 310
Rack travel in m: 10.20...10.30
3rd pressure hPa : 710
Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

L07

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 271.0...277.0
1000 s: (268.0...280.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 950...960

INTERMEDIATE RATED SPEED
Rack travel in mm : 14.00
Speed rpm : 850
Rack travel in mm : 5.00
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 130.0...170.0
1000 s: (120.0...180.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5184-P12

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a18
 Edition : 02.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 849
 Injection pump
 Pump designation : PES6P120A72ORS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...850PA878-10
 K
 Governor no. : 0 421 815 209

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E6 275 4VH

1st version kW : 202.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 11.90...12.00

Del. quantity cm³/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.5...4.7

Del. quantity cm³/ : 3.2...3.8

100 s: (3.0...4.0)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

Del. quantity : 183.0...185.0

1000 : (180.0...188.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 50...58

Testing:

1st rack travel in: 10.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1025...1055
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.90...12.90
2nd speed rpm : 700
Rack travel in m: 12.80...12.90
3rd speed rpm : 600
Rack travel in m: 13.00...13.10
4th speed rpm : 500
Rack travel in m: 0.00...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement

Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 10.30...10.50
2nd pressure hPa : 225
Rack travel in m: 11.00...11.10
3rd pressure hPa : 385
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm³/ : 219.5...225.5
1000 s: (216.5...228.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 900...910

INTERMEDIATE RATED SPEED

Rack travel in mm : 11.30
Speed rpm : 805
Rack travel in mm : 4.60
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm³/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P4

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a13
 Edition : 02.05.90
 Replaces : 15.12.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 850
 Injection pump
 Pump designation : PES6P120A720RS7135
 EP type number : 0 412 726 807
 Governor
 Governor design. : RQV325...900PA848-24
 K
 Governor no. : 0 421 815 207

Customer-spec. information
 Customer : MACK TRUCKS INC.

Engine : E6-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00x2.00x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 14.80...14.90

Del. quantity cm³/ : 24.8...25.0

100 s: (24.5...25.3)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del. quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.10...3.30

3rd speed rpm : 850
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 7.50...7.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del. quantity : 248.5...250.5

1000 : (245.5...253.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever
position degrees: 56...64

Testing:

1st rack travel in: 13.80
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1075...1105
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 7...15

Testing:

Speed rpm : 275
Minimum rack travel: 6.60
Speed rpm : 325
Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 14.80...14.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.30
3rd speed rpm : 700
Rack travel in m: 15.00...15.10
4th speed rpm : 500
Rack travel in m: 0.00...14.90

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 15.20...15.30

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 8.30...8.70
2nd pressure hPa : 310
Rack travel in m: 10.20...10.30
3rd pressure hPa : 710
Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 271.0...277.0
1000 s: (268.0...280.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 130.5...134.5
1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 13.80
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 130.0...170.0
1000 s: (120.0...180.0)
Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1a14
Edition : 02.05.90
Replaces : 31.10.89
Test oil : ISO-4113
Combination no. : 0 402 746 851
Injection pump
Pump designation : PES6P120A720RS7135
EP type number : 0 412 726 807
Governor
Governor design. : RQV325...850PA848-25
K
Governor no. : 0 421 815 208

Customer-spec. information
Customer : MACK TRUCKS

Engine : E6 275 4VH

1st version kW : 202.0
Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 101

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
: (2.70...2.90)
Rack travel in mm : 10.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
Tolerance + - ° : 0.50 (0.75)
Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850
Rack travel in mm : 11.90...12.00
Del.quantity cm3/ : 18.3...18.5
100 s: (18.0...18.8)
Spread cm3 : 0.5
100 s: (0.9)

2nd speed rpm : 325.0
Rack travel in mm : 4.4...4.6
Del.quantity cm3/ : 3.2...3.8
100 s: (3.0...4.0)
Spread cm3 : 0.8
100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
travel mm : 1.20...1.40
2nd speed rpm : 450
travel mm : 2.80...3.10
3rd speed rpm : 850
travel mm : 6.20...6.40
4th speed rpm : 1000
travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 850
Aneroid pressure h: 900
Del.quantity : 183.0...185.0
1000 : (180.0...188.0)
Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 50...58

Testing:
1st rack travel in: 10.90
Speed rpm : 900...910
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1100
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.40...4.60

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 11.90...12.00
2nd speed rpm : 700
Rack travel in m: 12.50...12.70
3rd speed rpm : 600
Rack travel in m: 12.90...13.10
4th speed rpm : 500
Rack travel in m: 0.00...12.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 900
Rack travel mm : 13.00...13.10

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 9.90...10.30
2nd pressure hPa : 225
Rack travel in m: 11.00...11.10
3rd pressure hPa : 385
Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 600
Del.quantity cm3/ : 219.5...225.5
1000 s: (216.5...228.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90
Speed rpm : 900...910

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 195.0...235.0
1000 s: (185.0...245.0)
Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.40...4.60
Del.quantity cm3/ : 32.0...38.0
1000 s: (30.0...40.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:
: MACK # 313GC5184-P2

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a3
 Edition : 02.05.90
 Replaces : 2.1.90
 Test oil : ISO-4113

Combination no. : 0 402 746 852

Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA909K
 Governor no. : 0 421 815 210

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-400

1st version kw : 298.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm³/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 275.0...277.0

1000 : (272.0...280.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 14.80
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack trave: 6.30
Speed rpm : 325
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.40
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 15.80...15.90

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 325
Rack travel in m: 10.20...10.30
3rd pressure hPa : 790
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 302.5...308.5
1000 s: (299.5...311.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.80
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a4
 Edition : 02.05.90
 Replaces : 15.12.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 853
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA909-1K
 Governor no. : 0 421 815 211

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.60...13.70

Del.quantity cm3/ : 23.1...23.3

100 s: (22.9...23.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 650
 travel mm : 5.60...5.80

4th speed rpm : 900
 travel mm : 8.30...8.50

5th speed rpm : 1100
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 231.5...233.5

1000 : (229.5...235.5)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 12.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack trave: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.60...13.70
2nd speed rpm : 625
Rack travel in m: 13.30...13.50
3rd speed rpm : 500
Rack travel in m: 0.00...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50
3rd pressure hPa : 685
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 263.0...269.0
1000 s: (260.0...272.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.30...10.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P2

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA 9,5 a 1
 Edition : 08.06.90
 Replaces : 15.12.89
 Test oil : ISO-4113

Combination no. : 0 402 746 857

Injection pump
 Pump designation : PES6P120A72ORS7177
 EP type number : 0 412 726 823
 Governor
 Governor design. : RQ275/1100PA915
 Governor no. : 0 421 801 478

Customer-spec. information
 Customer : IVECO-FIAT

Engine : 8460.41.601

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 105

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 18.3...18.5

100 s: (18.0...18.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
 Rack travel in mm : 5.7...5.9
 Del.quantity cm³/ : 1.6...2.2
 100 s: (1.3...2.5)

Spread cm³ : 0.8
 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -2

Speed rpm : 600
 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 183.0...185.0
 1000 : (180.0...188.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
 Setting point:
 Speed rpm : 600
 Rack travel in mm : 20.0

Testing:
 1st rack travel in: 11.30
 Speed rpm : 1145...1160
 2nd rack travel in: 4.00
 Speed rpm : 1230...1260

4th rack travel in: 1350
Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring
Speed rpm : 275
Rack travel in mm : 5.8

Testing:

Speed rpm : 100
Minimum rack trave: 7.30
Speed rpm : 275
Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 330...370

TORQUE CONTROL

Dimension a mm : -
Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.60...12.70
2nd speed rpm : 600
Rack travel in m: 12.60...12.80

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900
Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 9.70...9.80
2nd pressure hPa : 320
Rack travel in m: 11.70...11.80
3rd pressure hPa : 260
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 119.0...121.0
1000 s: (116.0...124.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.30
Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 125.0...155.0
1000 s: (121.0...159.0)

Remarks:

APPLICATION

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 12,0 d 3
 Edition : 12.04.90
 Replaces : 2.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 860

Injection pump
 Pump designation : PES6P120A720LS7161
 EP type number : 0 412 726 817
 Governor
 Governor design. : RQV300..1050PA940-3
 Govenner no. : 0 421 813 827

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 A

1st version kW : 213.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30
 : (5.15...5.35)
 Rack travel in mm : 9.00...12.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm³/ : 20.1...20.3

100 s: (19.8...20.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.3...6.7

Del.quantity cm³/ : 1.4...2.0

100 s: (1.1...2.3)

Spread cm³ : 0.6

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.30

2nd speed rpm : 600

travel mm : 4.90...5.10

3rd speed rpm : 800

travel mm : 5.90...6.20

4th speed rpm : 1100

travel mm : 8.10...8.50

5th speed rpm : 1175

travel mm : 9.70...10.20

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
Speed rpm : 600
Aneroid pressure h: 681
Del. quantity : 201.0...203.0
1000 : (198.0...206.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:

1st rack travel in: 12.50
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1150...1180
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 82...90

Testing:

Speed rpm : 200
Minimum rack travel: 8.60
Speed rpm : 300
Rack travel in mm : 6.30...6.70

CONSTANT REGULATION

Speed rpm : 300...450

TORQUE CONTROL

Dimension a mm : 1.20
2nd speed rpm : 1050
Rack travel in m: 13.50...13.70
3rd speed rpm : 750
Rack travel in m: 14.70...14.90

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 680
Rack travel mm : 14.10...14.30

Measurement
Speed 1/min : 600

1st pressure hPa : 300
Rack travel in m: 12.40...12.60
2nd pressure hPa : 400
Rack travel in m: 13.10...13.30
3rd pressure hPa : 800

Rack travel in m: 14.20...14.30 *
4th pressure hPa : -
Rack travel in m: 11.30...11.60

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 1050
Del. quantity cm³/ : 193.0...195.0
1000 s: (190.0...198.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 750
Del. quantity cm³/ : 218.0...222.0
1000 s: (215.0...225.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 144.0...146.0
1000 s: (141.0...149.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack travel: 12.50
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 170.0...190.0
1000 s: (166.0...194.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 f1
 Edition : 02.05.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 861

Injection pump
 Pump designation : PES6P120A72ORS7183
 EP type number : 0 412 726 825
 Governor
 Governor design. : RQV325...875PA848-26
 K
 Governor no. : 0 421 815 212

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM 6-300L

1st version kw : 183.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 6.00...8.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.20...11.30

Del. quantity cm³/ : 20.9...21.1

100 s: (20.6...21.4)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del. quantity cm³/ : 4.1...4.7

100 s: (3.9...4.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.50...2.80

3rd speed rpm : 600

travel mm : 4.10...4.30

4th speed rpm : 875

travel mm : 6.90...7.10

5th speed rpm : 1000

travel mm : 8.20...8.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1500

Del. quantity : 209.0...211.0

1000 : (206.0...214.0)

Spread cm3 : 5.00 —
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 10.20
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.20...11.30
2nd speed rpm : 510
Rack travel in m: 16.60...16.80
3rd speed rpm : 700
Rack travel in m: 13.20...13.40
4th speed rpm : 600
Rack travel in m: 15.20...15.60
5th speed rpm : 420
Rack travel in m: 0.00...16.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1500
Rack travel mm : 16.60...16.80

Measurement
Speed 1/min : 510

1st pressure hPa : —
Rack travel in m: 8.70...9.10
2nd pressure hPa : 435

Rack travel in m: 10.80...11.00
3rd pressure hPa : 795
Rack travel in m: 14.60...15.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 510
Del. quantity cm3/ : 308.0...314.0
1000 s: (305.0...317.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: —
Speed rpm : 400
Del. quantity cm3/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm3/ : 150.0...170.0
1000 s: (145.0...175.0)
Rack travel in mm : 8.70...9.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del. quantity cm3/ : 41.0...47.0
1000 s: (39.0...49.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5174-P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 f
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 862

Injection pump
 Pump designation : PES6P120A72ORS7183
 EP type number : 0 412 726 825
 Governor
 Governor design. : RQV325...875PA878-11
 K
 Governor no. : 0 421 815 213

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM 6-300L

1st version kW : 183.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 6.00...8.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.20...11.30

Del.quantity cm³/ : 20.9...21.1
 100 s: (20.6...21.4)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.6...4.8
 Del.quantity cm³/ : 4.1...4.7
 100 s: (3.9...4.9)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.50...2.80

3rd speed rpm : 600
 travel mm : 4.10...4.30

4th speed rpm : 875
 travel mm : 7.30...7.50

5th speed rpm : 1000
 travel mm : 8.70...9.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1500
 Del.quantity : 209.0...211.0
 1000 : (206.0...214.0)

Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 10.20
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 11.20...11.30
2nd speed rpm : 510
Rack travel in m: 16.60...16.80
3rd speed rpm : 700
Rack travel in m: 13.30...13.50
4th speed rpm : 600
Rack travel in m: 15.50...15.70
5th speed rpm : 450
Rack travel in m: 0.00...16.60

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1500
Rack travel mm : 16.60...16.80

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.70...9.10
2nd pressure hPa : 435

Rack travel in m: 10.80...11.00
3rd pressure hPa : 795
Rack travel in m: 14.60...15.00

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1500
Speed rpm : 510
Del.quantity cm³/ : 308.0...314.0
1000 s: (305.0...317.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 154.0...158.0
1000 s: (152.0...160.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.20
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 11.20
Speed rpm : 805
Rack travel in mm : 4.70
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 165.0...205.0
1000 s: (160.0...210.0)
Rack travel in mm : 8.70...9.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.60...4.80
Del.quantity cm³/ : 41.0...47.0
1000 s: (39.0...49.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5174-P8

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e1
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

 Combination no. : 0 402 746 864

 Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...900PA878-12
 K
 Govenrer no. : 0 421 815 215

 Customer-spec. information
 Customer : MACK TRUCKS

 Engine : EC6-350 4VH

 1st version kw : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

 Overflow valve : 2 417 413 011

 Inlet press., bar : 1.50

 Overflow
 quantity min. 1/h: 160...170

 Test nozzle holder
 assembly : 1 688 901 101

 Opening
 pressure, bar : 207...210

 Orifice plate
 diameter mm : 0,6

 Test lines : 1 680 750 008

 Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

 Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

 Phasing : 0-60-120-180-240-300

 Tolerance + - ° : 0.50 (0.75)

 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

 Rack travel in mm : 16.00...16.10

 Del.quantity cm³/ : 25.5...25.7
 100 s: (25.2...26.0)

 Spread cm³ : 0.5

 100 s: (0.9)

 2nd speed rpm : 325.0
 Rack travel in mm : 4.3...4.5
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 3.00...3.40
 3rd speed rpm : 850
 travel mm : 5.90...6.10
 4th speed rpm : 1000
 travel mm : 7.40...7.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200
 Del.quantity : 255.5...257.5
 1000 : (252.5...260.5)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 15.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1115...1145
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 16.00...16.10
2nd speed rpm : 625
Rack travel in m: 16.50...16.70
3rd speed rpm : 550
Rack travel in m: 0.00...16.40

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 16.50...16.70

Measurement
Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 265
Rack travel in m: 11.30...11.40
3rd pressure hPa : 665
Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm³/ : 280.0...286.0
1000 s: (277.0...289.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 141.5...145.5
1000 s: (139.5...147.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 15.00
Speed rpm : 950...960

INTERMEDIATE RATED SPEED
Rack travel in mm : 13.70
Speed rpm : 850
Rack travel in mm : 5.00
Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5181P12

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e2
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 865

Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA878-13
 K
 Governor no. : 0 421 815 216

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM6-275L 4VH

1st version kw : 205.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 19.3...19.5
 100 s: (19.1...19.7)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...5.1
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 193.5...195.5
 1000 : (191.5...197.5)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 57...65

Testing:

1st rack travel in: 12.60

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 1045...1075

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Testing:

Speed rpm : 275

Minimum rack travel: 6.20

Speed rpm : 325

Rack travel in mm : 4.70...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 13.60...13.70

2nd speed rpm : 510

Rack travel in m: 15.40...15.60

3rd speed rpm : 750

Rack travel in m: 13.90...14.20

4th speed rpm : 600

Rack travel in m: 15.10...15.30

5th speed rpm : 420

Rack travel in m: 0.00...15.20

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510

Pressure hPa : 1200

Rack travel mm : 15.40...15.60

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 10.70...11.10

2nd pressure hPa : 265

Rack travel in m: 12.10...12.20

3rd pressure hPa : 450

Rack travel in m: 14.20...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm³/ : 261.0...267.0

1000 s: (259.0...269.0)

Spread

cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm³/ : 152.0...156.0

1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 915...925

INTERMEDIATE RATED SPEED

Rack travel in mm : 12.70

Speed rpm : 805

Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 185.0...225.0

1000 s: (175.0...235.0)

Rack travel in mm : 10.70...11.10

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.70...5.10

Del.quantity cm³/ : 39.0...45.0

1000 s: (37.0...47.0)

Spread

cm³ : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P8

Delivery-valve spring pre-tension

3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a5
 Edition : 24.02.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 866

Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA909-2K
 Governor no. : 0 421 815 217

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-300L

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 21.1...21.3

100 s: (20.9...21.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.8...5.0

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 211.0...213.0

1000 : (209.0...215.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 11.60
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.60...12.70
2nd speed rpm : 510
Rack travel in m: 13.60...13.80
3rd speed rpm : 400
Rack travel in m: 0.00...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 370
Rack travel in m: 9.50...9.60
3rd pressure hPa : 740
Rack travel in m: 12.30...12.70

START CUT-OUT

Speed 1/min : 275 (285)

M03

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 292.5...296.5
1000 s: (289.5...299.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P10

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e4
 Edition : 08.06.90
 Replaces : 2.1.90
 Test oil : ISO-4113

Combination no. : 0 402 746 867

Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...900PA848-27
 K
 Governor no. : 0 421 815 218

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EC6-350 4VH

1st version kw : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 16.00...16.10

Del.quantity cm³/ : 25.5...25.7
 100 s: (25.2...26.0)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.3...4.5
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.00...3.40

3rd speed rpm : 850
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 7.40...7.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 900
 Aneroid pressure h: 1200
 Del.quantity : 255.5...257.5
 1000 : (252.5...260.5)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:
1st rack travel in: 15.00
Speed rpm : 950...960
2nd rack travel in: 4.00
Speed rpm : 1095...1125
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:
Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 16.00...16.10
2nd speed rpm : 625
Rack travel in m: 16.50...16.70
3rd speed rpm : 550
Rack travel in m: 0.00...16.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 625
Pressure hPa : 1200
Rack travel mm : 16.50...16.70

Measurement

Speed 1/min : 625

1st pressure hPa : -
Rack travel in m: 9.40...9.80
2nd pressure hPa : 265
Rack travel in m: 11.30...11.40
3rd pressure hPa : 665
Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 280.0...286.0
1000 s: (277.0...289.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 141.5...145.5
1000 s: (139.5...147.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 15.00
Speed rpm : 950...960

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 135.0...175.0
1000 s: (125.0...185.0)
Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.30...4.50
Del.quantity cm3/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e5
 Edition : 02.05.90
 Replaces : 9.3.90
 Test oil : ISO-4113

Combination no. : 0 402 746 868

Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-28
 K
 Governor no. : 0 421 815 219

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM6-275L 4VH

1st version kW : 205.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 19.3...19.5

100 s: (19.1...19.7)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...5.1

Del.quantity cm³/ : 3.9...4.5

100 s: (3.7...4.7)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.10

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 193.5...195.5

1000 : (191.5...197.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:

1st rack travel in: 12.60
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1045...1075
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 6.20
Speed rpm : 325
Rack travel in mm : 4.70...5.10

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.60...13.70
2nd speed rpm : 510
Rack travel in m: 15.40...15.60
3rd speed rpm : 750
Rack travel in m: 13.90...14.20
4th speed rpm : 600
Rack travel in m: 15.10...15.30
5th speed rpm : 420
Rack travel in m: 0.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 15.40...15.60

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 10.70...11.10
2nd pressure hPa : 265
Rack travel in m: 12.10...12.20
3rd pressure hPa : 450

M07

Rack travel in m: 14.20...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm³/ : 261.0...267.0
1000 s: (259.0...269.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1200
Speed rpm : 875
Del.quantity cm³/ : 179.0...181.0 *
1000 s: (151.0...173.5)
Speed rpm : 400
Del.quantity cm³/ : 152.0...156.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 915...925

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 185.0...225.0
1000 s: (175.0...235.0)
Rack travel in mm : 10.70...11.10

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...5.10
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P6

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 1¹/₁ e6
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 869

Injection pump
 Pump designation : PES6P120A720RS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA848-29
 K
 Governor no. : 0 421 815 220

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EMC6 250L 4VH

1st version kw : 196.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 12.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.00...13.10

Del.quantity cm³/ : 18.4...18.6
 100 s: (18.2...18.8)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 3.9...4.5
 100 s: (3.7...4.7)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 850
 travel mm : 6.20...6.40

4th speed rpm : 1000
 travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 900
 Del.quantity : 184.0...186.0
 1000 : (182.0...188.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 55...63

Testing:

1st rack travel in: 12.00
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1035...1065
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 10...18

Testing:

Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.00...13.10
2nd speed rpm : 510
Rack travel in m: 14.90...15.10
3rd speed rpm : 650
Rack travel in m: 13.90...14.20
4th speed rpm : 450
Rack travel in m: 0.00...14.70

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 14.90...15.10

Measurement

Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 10.40...10.80
2nd pressure hPa : 205
Rack travel in m: 11.70...11.80
3rd pressure hPa : 460
Rack travel in m: 13.90...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm³/ : 252.0...258.0
1000 s: (250.0...260.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm³/ : 152.0...156.0
1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 12.00
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 160.0...200.0
1000 s: (150.0...210.0)
Rack travel in mm : 10.40...10.80

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm³/ : 39.0...45.0
1000 s: (37.0...47.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5181P4

Delivery-valve spring pre-tension
3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a6
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 870

Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA878-14
 K

Governer no. : 0 421 815 222

Customer-spec. information
 Customer : MACK

Engine : EM7-250L 4VH

1st version kW : 187.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

M10

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 10.40...10.50

Del.quantity cm³/ : 17.4...17.6
 100 s: (17.1...17.9)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.30...1.60
 2nd speed rpm : 500
 travel mm : 3.40...4.00
 3rd speed rpm : 900
 travel mm : 6.70...6.90
 4th speed rpm : 1075
 travel mm : 8.40...8.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 900
 Del.quantity : 174.0...176.0
 1000 : (171.0...179.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 9.40
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1020...1050
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 12...20

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 10.40...10.50
2nd speed rpm : 510
Rack travel in m: 11.90...12.10
3rd speed rpm : 450
Rack travel in m: 0.00...11.80

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 900
Rack travel mm : 11.90...12.10

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 7.80...8.20
2nd pressure hPa : 235
Rack travel in m: 8.80...8.90
3rd pressure hPa : 485
Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm3/ : 244.0...250.0
1000 s: (241.0...253.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 9.80
Speed rpm : 805

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5179-P28

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 871

Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA929K
 Governor no. : 0 421 815 223

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-400

1st version kW : 298.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 15.80...15.90

Del.quantity cm³/ : 27.5...27.7

100 s: (27.2...28.0)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 5.1...5.3

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 2.80...3.20

3rd speed rpm : 650
 travel mm : 5.60...5.80

4th speed rpm : 900
 travel mm : 8.30...8.50

5th speed rpm : 1100
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 275.0...277.0

1000 : (272.0...280.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 14.80
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1105...1135
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack trave: 6.30
Speed rpm : 325
Rack travel in mm : 5.10...5.30

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 15.80...15.90
2nd speed rpm : 625
Rack travel in m: 15.20...15.40
3rd speed rpm : 700
Rack travel in m: 15.40...15.60
4th speed rpm : 500
Rack travel in m: 0.00...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 15.80...15.90

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.50...8.90
2nd pressure hPa : 325
Rack travel in m: 10.20...10.30
3rd pressure hPa : 790
Rack travel in m: 13.80...14.20

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 302.5...308.5
1000 s: (299.5...311.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 14.80
Speed rpm : 940...950

INTERMEDIATE RATED SPEED
Rack travel in mm : 14.70
Speed rpm : 850.0

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P8

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c1
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 872
 Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...900PA929-1K
 Governor no. : 0 421 815 224

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-350

1st version kW : 261.0
 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 13.60...13.70

Del.quantity cm³/ : 23.1...23.3

100 s: (22.9...23.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

Del.quantity : 231.5...233.5

1000 : (229.5...235.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 58...66

Testing:
1st rack travel in: 12.60
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1080...1110
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 5.90
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 900
Rack travel in m: 13.60...13.70
2nd speed rpm : 625
Rack travel in m: 13.30...13.50
3rd speed rpm : 500
Rack travel in m: 0.00...12.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 900
Pressure hPa : 1200
Rack travel mm : 13.60...13.70

Measurement
Speed 1/min : 900

1st pressure hPa : -
Rack travel in m: 8.00...8.40
2nd pressure hPa : 325
Rack travel in m: 9.40...9.50
3rd pressure hPa : 685
Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min : 275 (285)

M15

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 625
Del.quantity cm3/ : 263.0...269.0
1000 s: (260.0...272.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 153.0...157.0
1000 s: (151.0...159.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 12.60
Speed rpm : 940...950

INTERMEDIATE RATED SPEED
Rack travel in mm : 12.70
Speed rpm : 850

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 170.0...210.0
1000 s: (160.0...220.0)
Rack travel in mm : 10.30...10.90

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P4

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c2
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 873

Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA929-2K
 Governor no. : 0 421 815 225

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-300L

1st version kW : 224.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 12.60...12.70

Del.quantity cm³/ : 21.1...21.3

100 s: (20.9...21.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.8...5.0
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 650
 travel mm : 5.60...5.80
 4th speed rpm : 900
 travel mm : 8.30...8.50
 5th speed rpm : 1100
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 211.0...213.0
 1000 : (209.5...215.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 57...65

Testing:
1st rack travel in: 11.60
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1050...1080
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.00
Speed rpm : 325
Rack travel in mm : 4.80...5.00

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 12.60...12.70
2nd speed rpm : 510
Rack travel in m: 13.60...13.80
3rd speed rpm : 400
Rack travel in m: 0.00...13.00

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.60...13.80

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.10...8.50
2nd pressure hPa : 370
Rack travel in m: 9.50...9.60
3rd pressure hPa : 740
Rack travel in m: 12.30...12.70

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del. quantity cm³/ : 292.5...296.5
1000 s: (189.5...199.5)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del. quantity cm³/ : 157.5...161.5
1000 s: (155.5...163.5)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.60
Speed rpm : 915...925

INTERMEDIATE RATED SPEED
Rack travel in mm : 11.90
Speed rpm : 805

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.80...5.00
Del. quantity cm³/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm³ : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P12

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a7
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113
 Combination no. : 0 402 746 874
 Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...850PA909-3K
 Governor no. : 0 421 815 230

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-300

1st version kW : 220.0
 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 20.4...20.6

100 s: (20.2...20.8)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

Del.quantity : 204.0...206.0

1000 : (202.0...208.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 11.20
Speed rpm : 890...900
2nd rack travel in: 4.00
Speed rpm : 1030...1060
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 5...13

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 12.40...12.60
3rd speed rpm : 500
Rack travel in m: 0.00...11.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1200
Rack travel mm : 12.40...12.60

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 265
Rack travel in m: 9.00...9.10
3rd pressure hPa : 565
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 241.0...247.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 148.0...152.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 890...900

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P14

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 a8
 Edition : 02.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 875
 Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...975PA909-4K
 Govenner no. : 0 421 815 231

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-300A

1st version kw : 224.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975
 Rack travel in mm : 12.30...12.40
 Del.quantity cm³/ : 20.1...20.3
 100 s: (19.9...20.5)
 Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 0.50...1.00
 2nd speed rpm : 325
 travel mm : 1.50...1.70
 3rd speed rpm : 450
 travel mm : 2.90...3.30
 4th speed rpm : 1000
 travel mm : 8.40...8.60
 5th speed rpm : 1200
 travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Aneroid pressure h: 1200
 Del.quantity : 201.0...203.0
 1000 : (199.0...205.0)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 54...62

Testing:

1st rack travel in: 11.30

Speed rpm : 1015...1025

2nd rack travel in: 4.00

Speed rpm : 1145...1175

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

Speed rpm : 275

Minimum rack travel: 6.10

Speed rpm : 325

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 975

Rack travel in m: 12.30...12.40

2nd speed rpm : 600

Rack travel in m: 11.70...11.90

3rd speed rpm : 500

Rack travel in m: 0.00...11.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 975

Pressure hPa : 1200

Rack travel mm : 12.30...12.40

Measurement

Speed 1/min : 975

1st pressure hPa : -

Rack travel in m: 7.70...8.10

2nd pressure hPa : 235

Rack travel in m: 9.00...9.10

3rd pressure hPa : 460

Rack travel in m: 10.80...11.20

START CUT-OUT

Speed 1/min : 275 (285)

M21

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 600

Del.quantity cm³/ : 221.0...227.0

1000 s: (219.0...229.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm³/ : 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.70...4.90

Del.quantity cm³/ : 40.0...46.0

1000 s: (38.0...48.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P18

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c3
 Edition : 02.05.90
 Replaces : 28.9.89
 Test oil : ISO-4113

Combination no. : 0 402 746 876

Injection pump
 Pump designation : PES6P120A720RS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...850PA929-3K
 Governor no. : 0 421 815 232

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-300 4VH

1st version kW : 220.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow quantity min. 1/h: 160...170

Test nozzle holder assembly : 1 688 901 101

Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant. per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 12.20...12.30

Del.quantity cm³/ : 20.4...20.6
 100 s: (20.2...20.8)

Spread cm³ : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 4.0...4.6
 100 s: (3.8...4.8)

Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40
 2nd speed rpm : 450
 travel mm : 2.80...3.20
 3rd speed rpm : 650
 travel mm : 5.60...5.80
 4th speed rpm : 900
 travel mm : 8.30...8.50
 5th speed rpm : 1100
 travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 850
 Aneroid pressure h: 1200
 Del.quantity : 204.0...206.0
 1000 : (202.0...208.0)

Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 51...59

Testing:
1st rack travel in: 11.20
Speed rpm : 890...900
2nd rack travel in: 4.00
Speed rpm : 1040...1070
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 7...15

Testing:
Speed rpm : 275
Minimum rack travel: 6.30
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 850
Rack travel in m: 12.20...12.30
2nd speed rpm : 600
Rack travel in m: 12.50...12.70
3rd speed rpm : 500
Rack travel in m: 0.00...11.10

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1200
Rack travel mm : 12.50...12.70

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 265
Rack travel in m: 9.00...9.10
3rd pressure hPa : 565
Rack travel in m: 11.20...11.60

START CUT-OUT

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 241.0...247.0
1000 s: (239.0...249.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 148.0...152.0
1000 s: (146.0...154.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.20
Speed rpm : 890...900

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P22

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 c4
 Edition : 01.02.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 877
 Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...975PA929-4K
 Governor no. : 0 421 815 233

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-300A

1st version kW : 224.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975

Rack travel in mm : 12.30...12.40

Del.quantity cm³/ : 20.1...20.3

100 s: (19.9...20.5)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 0.50...1.00

2nd speed rpm : 325

travel mm : 1.50...1.70

3rd speed rpm : 450

travel mm : 2.90...3.30

4th speed rpm : 1000

travel mm : 8.40...8.60

5th speed rpm : 1200

travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

Del.quantity : 201.0...203.0

1000 : (199.0...205.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 11.30
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1165...1195
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 8...16

Testing:
Speed rpm : 275
Minimum rack trave: 6.10
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 12.30...12.40
2nd speed rpm : 600
Rack travel in m: 11.70...11.90
3rd speed rpm : 500
Rack travel in m: 0.00...11.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 975
Pressure hPa : 1200
Rack travel mm : 12.30...12.40

Measurement
Speed 1/min : 975

1st pressure hPa : -
Rack travel in m: 7.70...8.10
2nd pressure hPa : 235
Rack travel in m: 9.00...9.10
3rd pressure hPa : 570
Rack travel in m: 11.60...12.00

START CUT-OUT

Speed 1/min : 275 (285)

M25

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 221.0...227.0
1000 s: (219.0...229.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 146.0...150.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.30
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P20

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : RVI 12,0 i
Edition : 16.02.90
Replaces : 15.12.89
Test oil : ISO-4113
Combination no. : 0 402 746 878
Injection pump
Pump designation : PES6P120A320RS7191
EP type number : 0 412 726 828
Governor
Governor design. : RQV275...1000PA927
Governor no. : 0 421 813 808

Customer-spec. information
Customer : RVI

Engine : MIDR 06-35-40

1st version kW : 314.0
Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
assembly : 1 688 901 019

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter
x Wall thickness
x Length mm : 8.00X2.50X1000

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90
: (4.75...4.95)
Rack travel in mm : 12.50...13.50
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 13.90...14.00

Del.quantity cm3/ : 27.7...27.9

100 s: (27.4...28.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0

Rack travel in mm : 4.5...4.7

Del.quantity cm3/ : 2.3...2.9

100 s: (2.0...3.2)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
travel mm : 1.10...1.50

2nd speed rpm : 500
travel mm : 3.60...4.20

3rd speed rpm : 700
travel mm : 5.50...5.90

4th speed rpm : 1000
travel mm : 7.60...7.80

5th speed rpm : 1400
travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

Del.quantity : 277.0...279.0

1000 : (274.0...282.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 298...306

Testing:

1st rack travel in: 12.90
Speed rpm : 1065...1075
2nd rack travel in: 4.00
Speed rpm : 1195...1225
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 242...250

Testing:

Speed rpm : 200
Minimum rack travel: 5.80
Speed rpm : 275
Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 900

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 8.90...9.30
2nd pressure hPa : 600
Rack travel in m: 12.90...13.00
3rd pressure hPa : 240
Rack travel in m: 9.70...10.10

START CUT-OUT

Speed 1/min : 225 (245)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 1000

Del.quantity cm3/ : 268.0...274.0
1000 s: (265.0...277.0)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 128.0...136.0
1000 s: (125.0...139.0)

Spread cm3 : 10.00
1000 s: (-)

Aneroid pressure h: -

Speed rpm : 500

Del.quantity cm3/ : 142.0...144.0
1000 s: (139.0...147.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

Speed rpm : 1065...1075

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 145.0...175.0
1000 s: (141.0...179.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.50...4.70

Del.quantity cm3/ : 23.0...29.0
1000 s: (20.0...32.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : SAC 10,5 a
 Edition : 16.02.90
 Replaces : 2.1.90
 Test oil : ISO-4113

Combination no. : 0 402 746 879

Injection pump
 Pump designation : PES6P130A320LS7173-1
 EP type number : 0 412 736 803
 Governor
 Governor design. : RQV400...750PA928
 Governor no. : 0 421 813 809

Customer-spec. information
 Customer : SACM

Engine : UD25-L6

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 443 022

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 060

Outside diameter
 x Wall thickness
 x Length mm : 8.00X2.00X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90
 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 12.90...13.00

Del. quantity cm³/ : 48.0...48.3

100 s : (47.6...48.6)

Spread cm³ : 0.6

100 s : (1.0)

2nd speed rpm : 400.0

Rack travel in mm : 4.7...5.3

Del. quantity cm³/ : 5.0...5.6

100 s : (4.6...6.0)

Spread cm³ : 1.0

100 s : (1.4)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
 travel mm : 0.50...0.90

2nd speed rpm : 500
 travel mm : 1.90...2.10

3rd speed rpm : 650
 travel mm : 1.90...2.10

4th speed rpm : 750
 travel mm : 5.00...5.80

5th speed rpm : 900
 travel mm : 11.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 700
 Del. quantity : 480.0...483.0
 1000 : (476.5...486.5)

Spread cm³ : 6.00
 1000 : (10.00)

RATED SPEED

1st version
 Testing:
 1st rack travel in: 11.90
 Speed rpm : 750...755
 2nd rack travel in: 4.00

Speed rpm : 777...790
4th rack travel in: 900
Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed rpm : 100
Minimum rack trave: 6.50
Speed rpm : 400
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 670...730

INTERMEDIATE RATED SPEED

Rack travel in mm : 4.00

STARTING FUEL DELIVERY

Speed rpm : 100

Remarks:

:

APPLICATION

Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : BAO 15,9 b3
 Edition : 06.07.90
 Replaces : 2.10.89
 Test oil : ISO-4113

Combination no. : 0 402 746 880

Injection pump
 Pump designation : PES6P120A32ORS7105
 EP type number : 0 412 726 800
 Governor
 Governor design. : RQV350...900PA935-1
 Governor no. : 0 421 813 820

Customer-spec. information
 Customer : BAUDOUIN

Engine : 6P15-2

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70
 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

N02

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/ : 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0
 Rack travel in mm : 4.5...4.9
 Del.quantity cm3/ : 1.7...2.3
 100 s: (1.4...2.6)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300
 travel mm : 0.70...1.00

2nd speed rpm : 500
 travel mm : 3.10...3.80

3rd speed rpm : 800
 travel mm : 6.50...6.90

4th speed rpm : 900
 travel mm : 7.80...8.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1

Speed rpm : 940

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 339.0...341.0
 1000 : (336.0...344.0)

Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 117...125

Testing:
1st rack travel in: 11.00
Speed rpm : 940...950
2nd rack travel in: 4.00
Speed rpm : 1000...1030
4th rack travel in: 1150
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 21...29

Testing:
Speed rpm : 100
Minimum rack trave: 6.20
Speed rpm : 350
Rack travel in mm : 4.60...4.80

CONSTANT REGULATION
Speed rpm : 350...450

START CUT-OUT
Speed 1/min : 270 (290)

BREAKAWAY
1st version
1mm rack travel less than
full load rack tr: 11.00
Speed rpm : 940...950

Remarks:
:

APPLICATION
Navy

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : PER 12,2 f
 Edition : 06.07.90
 Replaces : 2.2.90
 Test oil : ISO-4113
 Combination no. : 0 402 746 882
 Injection pump
 Pump designation : PES6P120A320RS7156-1
 EP type number : 0 412 726 830
 Governor
 Governor design. : RQV300..1050PA941
 Governor no. : 0 421 813 834

Customer-spec. information
 Customer : PERKINS

Engine : 2006 TW-H

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 025
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 1 688 901 019
 Opening
 pressure, bar : 207...210
 Orifice plate
 diameter mm : 0,8
 Test lines : 1 680 750 067
 Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x1000
 (A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27
 Prestroke mm : 4.50...4.60
 : (4.45...4.65)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 4- 2- 6- 3- 5

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050
 Rack travel in mm : 14.00...14.10
 Del.quantity cm³/ : 26.9...27.1
 100 s: (26.6...27.4)
 Spread cm³ : 0.5
 100 s: (0.9)
 2nd speed rpm : 350.0
 Rack travel in mm : 8.3...8.5
 Del.quantity cm³/ : 6.3...6.9
 100 s: (6.1...7.1)
 Spread cm³ : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350
 travel mm : 0.80...1.20
 2nd speed rpm : 420
 travel mm : 3.60...4.20
 3rd speed rpm : 700
 travel mm : 4.70...5.30
 4th speed rpm : 1120
 travel mm : 5.50...5.70
 5th speed rpm : 1250
 travel mm : 8.70...9.10

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 800
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1050
 Aneroid pressure h: 1200
 Del.quantity : 269.0...271.0
 1000 : (266.0...274.0)

Spread cm3 : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 98...106

Testing:

1st rack travel in: 13.00
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 13.00
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 70...78

Testing:

Speed rpm : 200
Minimum rack travel: 10.00
Speed rpm : 350
Rack travel in mm : 8.30...8.50

CONSTANT REGULATION

Speed rpm : 350...420

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : 1200
Rack travel mm : 14.00...14.10

Measurement

Speed 1/min : 500

1st pressure hPa : -
Rack travel in m: 11.20...11.40
2nd pressure hPa : 710
Rack travel in m: 13.10...13.20
3rd pressure hPa : 560
Rack travel in m: 11.80...12.00

START CUT-OUT

Speed 1/min : 300 (320)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200
Speed rpm : 600

Del.quantity cm3/ : 275.0...281.0
1000 s : (272.0...284.0)
Spread cm3 : 8.00
1000 s : (12.0)
Aneroid pressure h: -
Speed rpm : 600
Del.quantity cm3/ : 182.0...184.0
1000 s : (179.0...187.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 13.00
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 185.0...225.0
1000 s : (181.0...229.0)

Remarks:

Delivery-valve spring pre-tension
3.2...3.4 mm.
Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring
preload on new delivery-valve holders
to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 s
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 884
 Injection pump
 Pump designation : PES6P120A720LS7196
 EP type number : 0 412 726 831
 Governor
 Governor design. : RQV450..1050PA886-1
 Governor no. : 0 421 813 835

Customer-spec. information
 Customer : MERCEDES-BENZ

Engine : OM447 h LA

1st version kW : 304.0
 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 025

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 100...120

Test nozzle holder
 assembly : 1 688 901 019

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X1000

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10
 : (4.95...5.15)
 Rack travel in mm : 19.00...21.00
 Firing order : 6- 2- 4- 1- 5- 3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 15.20...15.40

Del.quantity cm³/ : 28.4...28.6

100 s: (28.1...28.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 450.0

Rack travel in mm : 4.4...5.0

Del.quantity cm³/ : 1.0...1.6

100 s: (0.7...1.9)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400
 travel mm : 1.40...1.70

2nd speed rpm : 700
 travel mm : 4.00...4.40

3rd speed rpm : 1100
 travel mm : 7.60...8.10

4th speed rpm : 1200
 travel mm : 9.50...10.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 950
Del.quantity : 284.0...286.0
1000 : (281.0...289.0)
Spread cm³ : 5.00
1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 115...123

Testing:

1st rack travel in: 14.40
Speed rpm : 1090...1100
2nd rack travel in: 4.00
Speed rpm : 1180...1210
4th rack travel in: 1300
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 60...68
Speed rpm : 450
Rack travel in mm : 4.40...5.00

CONSTANT REGULATION

Speed rpm : 450...650

TORQUE CONTROL

Dimension a mm : 0.60
2nd speed rpm : 1050
Rack travel in m: 15.40...15.60
3rd speed rpm : 900
Rack travel in m: 15.70...15.90
4th speed rpm : 800
Rack travel in m: 16.00...16.20

Aneroid/Altitude Compensator Test

1st version

Setting
Speed rpm : 600
Pressure hPa : 950
Rack travel mm : 15.20...15.40

Measurement

Speed 1/min : 600
1st pressure hPa : 300
Rack travel in m: 11.80...12.00
2nd pressure hPa : 600
Rack travel in m: 13.70...13.90
3rd pressure hPa : 1200
Rack travel in m: 15.50...15.70
4th pressure hPa : -
Rack travel in m: 10.10...10.50

START CUT-OUT

Speed 1/min : 370 (390)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600
Speed rpm : 1050
Del.quantity cm³/ : 280.0...283.0
1000 s: (277.0...286.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: 1600
Speed rpm : 800
Del.quantity cm³/ : 298.0...302.0
1000 s: (295.0...305.0)
Spread cm³ : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm³/ : 145.0...147.0
1000 s: (142.0...150.0)
Spread cm³ : 8.00
1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 14.40
Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 280.0...300.0
1000 s: (276.0...304.0)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 e5
 Edition : 17.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 885
 Injection pump
 Pump designation : PES6P12QA72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...875PA944-3K
 Governor no. : 0 421 815 238

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-275

1st version kW : 205.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness : 6.00X2.00X600
 x Length mm

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 11.40...11.50

Del.quantity cm³/ : 19.2...19.4

100 s: (19.0...19.6)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

travel mm : 2.80...3.20

3rd speed rpm : 650

travel mm : 5.60...5.80

4th speed rpm : 900

travel mm : 8.30...8.50

5th speed rpm : 1100

travel mm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 192.0...194.0

1000 : (190.0...196.0)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 10.40

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 1025...1055

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rpm : 275

Minimum rack travel: 5.90

Speed rpm : 325

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 11.40...11.50

2nd speed rpm : 510

Rack travel in m: 12.80...13.00

3rd speed rpm : 600

Rack travel in m: 12.40...12.80

4th speed rpm : 450

Rack travel in m: 0.00...12.50

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510

Pressure hPa : 1200

Rack travel mm : 12.80...13.00

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 355

Rack travel in m: 9.40...9.50

3rd pressure hPa : 630

Rack travel in m: 11.50...11.90

START CUT-OUT

NO9

Speed 1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm3/ : 268.0...274.0

1000 s: (266.0...276.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm3/ : 157.5...161.5

1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/ : 190.0...230.0

1000 s: (180.0...240.0)

Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.70...4.90

Del.quantity cm3/ : 40.0...46.0

1000 s: (38.0...48.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P22

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 e1
 Edition : 02.05.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 886
 Injection pump
 Pump designation : PES6P120A72ORS7157
 EP type number : 0 412 726 814
 Governor
 Governor design. : RQV325...975PA944-4K
 Governor no. : 0 421 815 239

Customer-spec. information
 Customer : MACK TRUCKS

Engine : E7-250A

1st version kW : 186.0
 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY
 Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)
 Rack travel in mm : 10.50
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Tolerance + - ° : 0.50 (0.75)
 Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 975
 Rack travel in mm : 10.40...10.50
 Del.quantity cm³/ : 16.4...16.6
 100 s : (16.2...16.8)
 Spread cm³ : 0.5
 100 s : (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm³/ : 4.0...4.6
 100 s : (3.8...4.8)
 Spread cm³ : 0.8
 100 s : (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275
 travel mm : 0.50...1.00
 2nd speed rpm : 325
 travel mm : 1.50...1.70
 3rd speed rpm : 450
 travel mm : 2.90...3.30
 4th speed rpm : 1000
 travel mm : 8.40...8.60
 5th speed rpm : 1200
 travel mm : 10.20...10.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 975
 Aneroid pressure h : 1200
 Del.quantity : 164.5...166.5
 1000 : (162.5...168.5)
 Spread cm³ : 5.00
 1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 54...62

Testing:
1st rack travel in: 9.40
Speed rpm : 1015...1025
2nd rack travel in: 4.00
Speed rpm : 1120...1150
4th rack travel in: 1250
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 275
Minimum rack travel: 6.10
Speed rpm : 325
Rack travel in mm : 4.70...4.90

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 975
Rack travel in m: 10.40...10.50
2nd speed rpm : 600
Rack travel in m: 10.80...11.00
3rd speed rpm : 500
Rack travel in m: 0.00...10.20

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 600
Pressure hPa : 1200
Rack travel mm : 10.80...11.00

Measurement
Speed 1/min : 600

1st pressure hPa : -
Rack travel in m: 7.50...7.90
2nd pressure hPa : 195
Rack travel in m: 8.40...8.50
3rd pressure hPa : 375
Rack travel in m: 9.90...10.30

START CUT-OUT

Speed 1/min : 275 (285)

N11

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 600
Del.quantity cm3/ : 198.5...204.5
1000 s: (196.5...206.5)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 146.0...150.0
1000 s: (144.0...152.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 9.40
Speed rpm : 1015...1025

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 180.0...220.0
1000 s: (170.0...230.0)
Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks: : MACK # 313GC5185-P26

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 11,1 e9
 Edition : 02.05.90
 Replaces : -
 Test oil : ISO-4113

Combination no. : 0 402 746 888

Injection pump
 Pump designation : PES6P120A72ORS7164
 EP type number : 0 412 726 816
 Governor
 Governor design. : RQV325...875PA878-15
 K
 Govenner no. : 0 421 815 235

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EMC6 300L 4VH

1st version kw : 200.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 2 417 413 011

Inlet press., bar : 1.50

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85
 : (2.70...2.90)

Rack travel in mm : 12.00...13.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 14.90...15.00

Del.quantity cm3/ : 22.5...22.7
 100 s: (22.3...22.9)

Spread cm3 : 0.5
 100 s: (0.9)

2nd speed rpm : 325.0
 Rack travel in mm : 4.7...4.9
 Del.quantity cm3/ : 3.9...4.5
 100 s: (3.7...4.7)

Spread cm3 : 0.8
 100 s: (1.2)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325
 travel mm : 1.20...1.40

2nd speed rpm : 450
 travel mm : 3.00...3.40

3rd speed rpm : 850
 travel mm : 5.90...6.10

4th speed rpm : 1000
 travel mm : 7.40...7.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 875
 Aneroid pressure h: 1200
 Del.quantity : 225.0...227.0
 1000 : (223.0...229.0)

Spread cm3 : 5.00
 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 13.90

Speed rpm : 915...925

2nd rack travel in: 4.00

Speed rpm : 1065...1095

4th rack travel in: 1160

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 10...18

Testing:

Speed rpm : 275

Minimum rack travel: 5.90

Speed rpm : 325

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rpm : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 14.90...15.00

2nd speed rpm : 510

Rack travel in m: 16.80...17.00

3rd speed rpm : 700

Rack travel in m: 15.60...15.80

4th speed rpm : 600

Rack travel in m: 16.40...16.60

5th speed rpm : 420

Rack travel in m: 0.00...16.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510

Pressure hPa : 1200

Rack travel mm : 16.80...17.00

Measurement

Speed 1/min : 510

1st pressure hPa : -

Rack travel in m: 10.90...11.30

2nd pressure hPa : 375

Rack travel in m: 12.70...12.80

3rd pressure hPa : 735

Rack travel in m: 15.70...16.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm³/ : 305.0...311.0

1000 s: (302.0...314.0)

Spread cm³ : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400

Del.quantity cm³/ : 156.0...160.0

1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90

Speed rpm : 915...925

INTERMEDIATE RATED SPEED

Rack travel in mm : 11.20

Speed rpm : 805

Rack travel in mm : 4.80

Speed rpm : 300

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm³/ : 160.0...200.0

1000 s: (150.0...210.0)

Rack travel in mm : 10.90...11.30

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.70...4.90

Del.quantity cm³/ : 39.0...45.0

1000 s: (37.0...47.0)

Spread cm³ : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P16

Delivery-valve spring pre-tension

3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAC 12,0 h
 Edition : 09.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 402 746 890
 Injection pump
 Pump designation : PES6P120A720RS7200
 EP type number : 0 412 726 833
 Governor
 Governor design. : RQV325...875PA944-5K
 Governor no. : 0 421 815 240

Customer-spec. information
 Customer : MACK TRUCKS

Engine : EM7-275

1st version kW : 202.0
 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 2 417 413 011

Overflow
 quantity min. 1/h: 160...170

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35
 : (3.20...3.40)
 Rack travel in mm : 11.00...13.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 875

Rack travel in mm : 13.20...13.30

Del.quantity cm³/ : 23.5...23.7

100 s: (23.3...23.9)

Spread cm³ : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.9...5.1

Del.quantity cm³/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm³ : 0.8

100 s: (1.2)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 3.30...3.70

3rd speed rpm : 700

travel mm : 8.00...8.20

4th speed rpm : 900

travel mm : 9.40...9.60

5th speed rpm : 1050

travel mm : 10.60...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

Del.quantity : 235.5...237.5

1000 : (233.5...239.5)

Spread cm³ : 5.00

1000 : (9.00)

RATED SPEED

1st version
Control lever
position degrees: 60...68

Testing:
1st rack travel in: 12.20
Speed rpm : 915...925
2nd rack travel in: 4.00
Speed rpm : 1055...1085
4th rack travel in: 1200
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 8...16

Testing:
Speed rpm : 275
Minimum rack trave: 6.00
Speed rpm : 325
Rack travel in mm : 4.90...5.00

CONSTANT REGULATION
Speed rpm : 325...520

TORQUE CONTROL
Dimension a mm : ?
Torque control curve - 1st version
1st speed rpm : 875
Rack travel in m: 13.20...13.30
2nd speed rpm : 510
Rack travel in m: 13.80...14.00
3rd speed rpm : 550
Rack travel in m: 13.80...14.00
4th speed rpm : 450
Rack travel in m: 13.10...13.50

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 510
Pressure hPa : 1200
Rack travel mm : 13.80...14.00

Measurement
Speed 1/min : 510

1st pressure hPa : -
Rack travel in m: 8.60...9.00
2nd pressure hPa : 310
Rack travel in m: 10.10...10.20
3rd pressure hPa : 635
Rack travel in m: 12.50...12.90

START CUT-OUT

N15

Speed 1/min : 250 (255)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1200
Speed rpm : 510
Del.quantity cm3/ : 310.0...314.0
1000 s: (307.0...317.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: -
Speed rpm : 400
Del.quantity cm3/ : 155.5...159.5
1000 s: (153.5...161.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 12.20
Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 190.0...230.0
1000 s: (180.0...240.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P4

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 5
 Edition : 17.05.90
 Replaces : 19.03.90
 Test oil : ISO-4113

Combination no. : 0 403 436 106

Injection pump
 Pump designation : PES6MW100/12ORS1143
 EP type number : 0 413 406 137
 Governor
 Governor design. : RQV350...1100MW78-2
 Governor no. : 0 420 083 160

Cust. part no. : 3915907

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA-8.3

1st version kW : 179.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

N16

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
 : (3.00...3.20)

Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 7.3...7.5

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1210

travel mm : 9.00...9.40

2nd speed rpm : 1100

travel mm : 7.90...8.10

3rd speed rpm : 550

travel mm : 3.00...3.60

4th speed rpm : 350

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 44...52

Testing:
1st rack travel in: 11.70
Speed rpm : 1140...1150
2nd rack travel in: 4.00
Speed rpm : 1230...1260
4th rack travel in: 1330
Speed rpm : 0.00...1.00

LOW IDLE 1
Control lever
position degrees: 13...21
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.4

Testing:
Speed rpm : 100
Minimum rack trave: 9.00
Speed rpm : 350
Rack travel in mm : 7.30...7.50

CONSTANT REGULATION
Speed rpm : 360...550

Aneroid/Altitude
Compensator Test

1st version
Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.60...9.70

Measurement
Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 520
Rack travel in m: 11.90...12.20
3rd pressure hPa : 900
Rack travel in m: 12.70...12.80

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: -
Speed rpm : 500

Del.quantity cm³/ : 76.0...78.0
1000 s: (74.0...80.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 11.70
Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.30...7.50
Del.quantity cm³/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3915907
Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 D 4
 Edition : 06.07.90
 Replaces : 23.04.90
 Test oil : ISO-4113

Combination no. : 0 403 436 107

Injection pump
 Pump designation : PES6MW100/120RS1143
 EP type number : 0 413 406 137
 Governor
 Governor design. : RQV350...1100MW82-2
 Governor no. : 0 420 083 161

Cust. part no. : 3915168

Customer-spec. information
 Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 186.0
 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 017

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15
 : (3.00...3.20)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300
 Phasing :
 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm³/ : 15.0...15.2

100 s: (14.8...15.4)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0
 Rack travel in mm : 7.2...7.4
 Del.quantity cm³/ : 1.6...2.0
 100 s: (1.4...2.2)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1250
 travel mm : 9.00...9.40
 2nd speed rpm : 1140
 travel mm : 7.80...8.00
 3rd speed rpm : 700
 travel mm : 3.80...4.40
 4th speed rpm : 350
 travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1100
 Aneroid pressure h: 900
 Del.quantity : 150.0...152.0
 1000 : (148.0...154.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version
Control lever
position degrees: 42...50

Testing:

1st rack travel in: 11.70
Speed rpm : 1150...1160
2nd rack travel in: 4.00
Speed rpm : 1240...1270
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 12...20
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 7.3

Testing:

Speed rpm : 100
Minimum rack travel: 8.80
Speed rpm : 350
Rack travel in mm : 7.20...7.40
Rack travel in mm : 2.00

CONSTANT REGULATION

Speed rpm : 360...500

TORQUE CONTROL

Torque control curve - 1st version
1st speed rpm : 1100
Rack travel in m: 12.70...12.80
2nd speed rpm : 700
Rack travel in m: 13.60...13.70
3rd speed rpm : 900
Rack travel in m: 12.90...13.20

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 9.50...9.70

Measurement

Speed 1/min : 500

1st pressure hPa : 300
Rack travel in m: 10.80...10.90
2nd pressure hPa : 570
Rack travel in m: 12.30...12.60
3rd pressure hPa : 900
Rack travel in m: 13.60...13.70

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900
Speed rpm : 700
Del. quantity cm³/ : 159.0...161.0
1000 s: (157.0...163.0)
Spread cm³ : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del. quantity cm³/ : 77.0...79.0
1000 s: (75.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 11.70
Speed rpm : 1150...1160

STARTING FUEL DELIVERY

Speed rpm : 100
Del. quantity cm³/ : 205.0...225.0
1000 s: (202.0...228.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.20...7.40
Del. quantity cm³/ : 16.0...20.0
1000 s: (14.0...22.0)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

: C.D.C. # 3915168

Start-of-delivery mark/lock = 8.0°
angular displacement of the cam after
start of delivery of cylinder 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 A 31
 Edition : 06.07.90
 Replaces : -
 Test oil : ISO-4113
 Combination no. : 0 403 444 118
 Injection pump
 Pump designation : PES4MW100/72ORS1127
 EP type number : 0 413 404 103
 Governor
 Governor design. : RQV300...1200MW48-13
 Governor no. : 0 420 083 220

Customer-spec. information
 Customer : MB-NFZ

Engine : OM364A

1st version kW : 77.0
 Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42
 Overflow valve : 1 417 413 047
 Inlet press., bar : 1.50
 Test nozzle holder
 assembly : 0 681 343 009
 Opening
 pressure, bar : 172...175
 Test lines : 1 680 750 015
 Outside diameter
 x Wall thickness
 x Length mm : 6.00X1.50X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32
 Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200
 Rack travel in mm : 11.00...11.10
 Del. quantity cm³/ : 7.5...7.7
 100 s: (7.3...7.9)
 Spread cm³ : 0.3
 100 s: (0.6)

2nd speed rpm : 300.0
 Rack travel in mm : 8.2...8.4
 Del. quantity cm³/ : 1.0...1.4
 100 s: (0.7...1.6)
 Spread cm³ : 0.3
 100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1325
 travel mm : 9.40...9.80
 2nd speed rpm : 1250
 travel mm : 8.60...8.80
 3rd speed rpm : 550
 travel mm : 3.00...3.60
 4th speed rpm : 300
 travel mm : 1.20...1.60

GUIDE SLEEVE POSITION

Control-lever position
 Degree: -1
 Speed rpm : 1250
 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version
 Speed rpm : 1200
 Del. quantity : 75.0...77.0
 1000 : (73.0...79.0)
 Spread cm³ : 3.50
 1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 107...115

Testing:

1st rack travel in: 10.00
Speed rpm : 1240...1250
2nd rack travel in: 4.00
Speed rpm : 1310...1340
4th rack travel in: 1400
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 75...83
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 8.3

Testing:

Speed rpm : 100
Minimum rack travel: 9.70
Speed rpm : 300
Rack travel in mm : 8.20...8.40

TORQUE CONTROL

Dimension a mm : 1.00
Torque control curve - 1st version
1st speed rpm : 1200
Rack travel in m: 11.00...11.10
2nd speed rpm : 600
Rack travel in m: 12.00...12.20
3rd speed rpm : 800
Rack travel in m: 11.60...11.80
4th speed rpm : 900
Rack travel in m: 11.20...11.40

START CUT-OUT

Speed 1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600
Del.quantity cm³/ : 65.0...68.0
1000 s: (62.5...70.5)
Spread cm³ : 5.00
1000 s: (7.0)
Speed rpm : 800
Del.quantity cm³/ : 70.0...73.0
1000 s: (67.5...75.5)

BREAKAWAY

1st version

1mm rack travel less than
full load rack tr: 10.00

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm³/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 8.20...8.40
Del.quantity cm³/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm³ : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 D 40
 Edition : 17.05.90
 Replaces : 12.08.88
 Test oil : ISO-4113
 Combination no. : 0 403 446 207
 Injection pump
 Pump designation : PES6MW100/72ORS1144
 EP type number : 0 413 406 138
 Governor
 Governor design. : RQ300/1300MW96
 Governor no. : 0 420 082 032

Customer-spec. information
 Customer : MB-NFZ

Engine : OM366A

1st version kW : 125.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve
 : 1 417 413 047

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 0 681 343 009

Opening
 pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter
 x Wall thickness
 x Length mm : 6.00x1.50x600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80
 : (3.65...3.85)
 Rack travel in mm : 9.00...12.00

Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 11.00...11.10

Del.quantity cm³/ : 7.7...7.9

100 s: (7.5...8.1)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 7.8...8.0

Del.quantity cm³/ : 0.9...1.3

100 s: (0.6...1.5)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1425

travel mm : 9.50...9.90

2nd speed rpm : 1350

travel mm : 7.80...8.00

3rd speed rpm : 525

travel mm : 4.90...5.50

4th speed rpm : 300

travel mm : 2.10...2.50

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

Speed rpm : 1200

Rack travel in mm : 12.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Del.quantity : 77.0...79.0

1000 : (75.0...81.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever
position degrees: 96...104

Setting point:
Speed rpm : 1200
Rack travel in mm : 13.5

Testing:
1st rack travel in: 10.00
Speed rpm : 1340...1350
2nd rack travel in: 4.00
Speed rpm : 1425...1455
4th rack travel in: 1550
Speed rpm : 0.00...1.00

LOW IDLE 1
Control Lever
position degrees: 71...79
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 7.9

Testing:
Speed rpm : 100
Minimum rack travel: 9.00
Speed rpm : 300
Rack travel in mm : 7.80...8.00

TORQUE CONTROL
Torque control curve - 1st version
1st speed rpm : 1300
Rack travel in m: 11.00...11.10
2nd speed rpm : 800
Rack travel in m: 11.80...12.00
3rd speed rpm : 585
Rack travel in m: 12.00...12.20
4th speed rpm : 1100
Rack travel in m: 11.00...11.10

START CUT-OUT

Speed 1/min : 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version
Speed rpm : 800
Del.quantity cm3/ : 76.0...78.0
1000 s: (74.0...80.0)
Spread cm3 : 5.00
1000 s: (7.0)
Speed rpm : 585
Del.quantity cm3/ : 68.5...71.5
1000 s: (66.0...74.0)

RACK STOP ADJUSTMENT

Speed rpm : 550

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 10.00
Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 78.0...88.0
1000 s: (75.0...91.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 7.80...8.00
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 7,6 R25
Edition : 17.05.90
Replaces : 09.12.88
Test oil : ISO-4113

Combination no. : 0 403 446 213

Injection pump
Pump designation : PES6MW100/32ORS1112
EP type number : 0 413 406 108
Governor
Governor design. : RQV350...1300MW72-4
Governor no. : 0 420 083 170

Customer-spec. information
Customer : NAVISTAR

Engine : DT-466

1st version kW : 154.5
Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
inlet temp. °C : 38...42

Overflow valve : 2 417 413 037

Inlet press., bar : 2.80

Test nozzle holder
assembly : 1 688 901 016

Opening
pressure, bar : 207...210

Orifice plate
diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10
 : (3.95...4.15)
Rack travel in mm : 9.00...12.00
Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 900

Rack travel in mm : 10.50...10.60

Del.quantity cm³/ : 9.9...10.1

100 s: (9.7...10.3)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 350.0

Rack travel in mm : 5.5...5.6

Del.quantity cm³/ : 1.6...2.0

100 s: (1.3...2.2)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460

travel mm : 9.10...9.50

2nd speed rpm : 1350

travel mm : 8.30...8.50

3rd speed rpm : 550

travel mm : 3.10...3.70

4th speed rpm : 350

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Del.quantity : 99.0...101.0

1000 : (97.0...103.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.50
Speed rpm : 1365...1385
2nd rack travel in: 4.00
Speed rpm : 1470...1480
4th rack travel in: 1600
Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever
position degrees: 9...17
Setting point w/out bumper spring
Speed rpm : 350
Rack travel in mm : 5.5

Testing:

Speed rpm : 100
Minimum rack travel: 7.30
Speed rpm : 350
Rack travel in mm : 5.50...5.60

CONSTANT REGULATION

Speed rpm : 390...480

START CUT-OUT

Speed 1/min : 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1300
Del.quantity cm3/ : 101.0...105.0
1000 s: (99.0...107.0)
Spread cm3 : 5.00
1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50
Speed rpm : 1365...1385

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 140.0...180.0
1000 s: (137.0...183.0)
Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.50...5.60

Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Perform pump setting only with IH hose
with restriction of 1.2 mm diameter.

Before checking sleeve position,
first adjust latching.

In unlatched condition, do not
operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before
shutoff.

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : IHC 8,3 S 3
 Edition : 29.06.90
 Replaces : 02.05.90
 Test oil : ISO-4113
 Combination no. : 0 403 446 235
 Injection pump
 Pump designation : PES6MW100/32ORS1171
 EP type number : 0 413 406 156
 Governor
 Governor design. : RQV300...1300MW80-5
 Governor no. : 0 420 083 197

Customer-spec. information
 Customer : RVI

Engine : MIDS 060212B

1st version kW : 113.0
 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil
 inlet temp. °C : 38...42

Overflow valve : 1 417 413 033

Inlet press., bar : 1.50

Test nozzle holder
 assembly : 1 688 901 101

Opening
 pressure, bar : 207...210

Orifice plate
 diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter
 x Wall thickness
 x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values _____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10
 : (2.95...3.15)
 Rack travel in mm : 9.00...12.00
 Firing order : 1- 5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm : 10.80...10.90

Del.quantity cm³/ : 8.8...9.0

100 s: (8.6...9.2)

Spread cm³ : 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 5.8...5.4

Del.quantity cm³/ : 1.8...2.2

100 s: (1.5...2.4)

Spread cm³ : 0.3

100 s: (0.5)

(B) Setting of injection pump
 with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.70...9.10

2nd speed rpm : 1350

travel mm : 7.60...7.80

3rd speed rpm : 500

travel mm : 2.80...3.40

4th speed rpm : 300

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm³ : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 9.80
Speed rpm : 1390...1400
2nd rack travel in: 4.00
Speed rpm : 1505...1535
4th rack travel in: 1700
Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever
position degrees: 10...18
Setting point w/out bumper spring
Speed rpm : 300
Rack travel in mm : 5.6

Testing:

Speed rpm : 200
Minimum rack travel: 7.00
Speed rpm : 300
Rack travel in mm : 5.80...5.40

Aneroid/Altitude
Compensator Test

1st version

Setting
Speed rpm : 500
Pressure hPa : -
Rack travel mm : 8.80...9.00

Measurement

Speed 1/min : 500

1st pressure hPa : 100
Rack travel in m: 9.30...9.40
2nd pressure hPa : 200
Rack travel in m: 10.20...10.50
3rd pressure hPa : 700
Rack travel in m: 10.80...10.90

START CUT-OUT

Speed 1/min : 230 (250)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700
Speed rpm : 900
Del.quantity cm3/ : 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3 : 5.00
1000 s: (7.0)
Aneroid pressure h: -
Speed rpm : 500
Del.quantity cm3/ : 49.0...51.0
1000 s: (47.0...53.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.80
Speed rpm : 1390...1400

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 90.0...110.0
1000 s: (87.0...113.0)
Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.80...5.40
Del.quantity cm3/ : 18.0...22.0
1000 s: (15.5...24.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

:
Start-of-delivery mark made with
prestroke 3.00...3.10 mm at barrel 1